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Our annual record of block signaling again shows marked progress, and the prediction of a year ago that two thousand miles of road would be equipped with automatic signals in 1909 has been more than fulfilled. The Rock Island and the St. Louis & San Francisco have followed the example of the Union and Southern Pacific in making large expenditures for automatic signals on single-track lines. The plans of the Boston & Maine are equally bold. The supremacy of automatic signals is also indicated in the action of the New York Central in substituting automatics for its costly controlled manual apparatus. The Pennsylvania has decided to use the block system on all of its passenger lines, another indication that the flagman and his fusees will be doomed—sometime! The controlled manual apparatus installed by the Illinois Central three years ago on several hundred miles of its single-track lines still stands unused, the same as a year ago; but the Burlington proposes to introduce this apparatus on nearly 500 miles of single-track during the coming year.

The suggestion has been made to us that in our annual round-up of equipment orders which we publish in this issue we should include a brief statement of current prices for different classes of equipment. It was the thought that this would be of considerable interest, and especially if it was kept up from year to year, so that the fluctuation of prices might be noted. It is hardly necessary to give such figures

for freight car equipment, as this is found in complete detail for the principal types of freight cars, both iron and steel, in the Interchange Rules of the Master Car Builders' Association. For the prices of locomotives we find that years ago the practice of the different railways as to types and details was much more uniform than it is now, and locomotive builders then had a base price for certain standard classes, but at present no such standards exist. Locomotive builders have long since ceased to make use of anything in this respect, except prices based upon actual detailed estimates of cost, prepared much as a contractor or builder would prepare his estimate for any special work. The types and details of the specifications are now so varied that no price for any particular class of engine which we might publish would have any special value, and owing to the fluctuation in the cost of materials, trade and labor conditions, the publication of such prices would prove to be very embarrassing to locomotive builders. The same thing is true in regard to prices for passenger equipment. The furnishing and fittings in modern passenger cars involve high-priced specialties of different designs, and these alone make a large difference in the value of any particular class of car; and in addition to this, there is such a wide variation in the design of the underframe and trucks that the cars of the same size and apparently of the same appearance on the exterior might vary in value more than 50 per cent.; thus coaches of the same size and much alike on the exterior range in prices from \$7,000 to \$12,000, and parlor cars from \$12,000 to \$22,000. The lighting equipment alone in a high-class passenger car now costs as much as \$3,000 more than in another car. It will thus be seen that for passenger cars and locomotives there is no such thing as a standard base, and much as we might desire to accommodate many of our readers in giving an idea as to the value of them from year to year, we regret, for the reasons given, we are unable to publish such figures.

CARS AND LOCOMOTIVES BUILT IN 1909.

The number of cars and locomotives built during the past year is but a little greater than the 1908 figures, in spite of the improvement in general business conditions during 1909. However, it has really been but a few months since the railways came into the market with substantial inquiries; and deliveries on orders placed at the beginning of this movement did not begin until this fall. Late in 1908 a number of heavy orders were placed, but after that there was a lull until last June. Notwithstanding the increased traffic to be carried in 1909, railways were not in such vital need of new rolling stock and motive power as at certain periods of the preceding year. More cars and locomotives were available for use. Features of that year's equipment market were the forced orders; rush orders placed when a road reached the point where to go without equipment any longer would be fatal. Makers of special equipment were getting telegraphed orders for absurdly small amounts of repair parts. But throughout the year, most roads kept their shops busy putting their rolling stock in shape so far as they had money to spare for material. The percentage of cars in shops, as reported by the American Railway Association, is normally 5 per cent. Beginning with January, 1908, it increased steadily, reaching 10.18 per cent. in July of that year. It has been falling since, but in June, 1909, it was still high, being 7.73 per cent.

During the past year 53 car building companies in the United States and Canada (output of one small plant estimated) built 96,419 cars, which is 23 per cent. more than the number built in 1908. These figures include subway and elevated cars but not street railway and interurban cars. It must be remembered also that the output of railway companies' shops is not included. Of the cars built in the United States, 84,416 were freight cars for domestic service, 2,435 freight for export, 2,599 passenger cars for domestic service

and 150 passenger for export. Of the freight cars 63,763 were of steel or had steel underframes; of the passenger cars, 1,650. Canada built 6,661 freight cars for domestic service, 58 freight for export, 99 passenger cars for domestic service, and one passenger car for export. In 1908, Canada built 8,598 freight cars and 79 passenger cars.

The following table shows the cars built during the past 11 years:

Year.	Freight.	Passen- ger.	Total.	Year.	Freight.	Passen- ger.	Total.
1899....	119,886	1,305	121,191	1905....	165,455	2,551	*168,006
1900....	115,631	1,636	117,267	1906....	240,503	3,167	*243,670
1901....	136,950	2,055	139,005	1907....	284,188	5,457	*289,645
1902....	162,599	1,948	164,547	1908....	76,555	1,716	*78,271
1903....	153,195	2,007	155,202	1909....	93,570	2,849	*96,419
1904....	60,806	2,144	62,950				

*Includes Canadian output.

Returns from 14 locomotive builders in the United States and Canada (estimating the output of two small plants) show a total of 2,887 engines. Of the 2,653 built in the United States, 2,362 were for domestic use and 291 for export. These figures include 16 electric and 119 compound locomotives. The Canadian engines, 234, were all for domestic service.

Comparisons for the last 17 years are given in the following table:

Year.	No. built.	Year.	No. built.	Year.	No. built.
1893.....	2,011	1899.....	2,475	1905.....	*5,491
1894.....	695	1900.....	3,153	1906.....	*6,952
1895.....	1,101	1901.....	3,384	1907.....	*7,362
1896.....	1,175	1902.....	4,070	1908.....	*2,342
1897.....	1,251	1903.....	5,152	1909.....	*2,887
1898.....	1,875	1904.....	3,441		

*Canadian output.

REVIEW OF 1909.

Most of the statistical records relating to the progress of American railways during the calendar year 1909 are given in full detail elsewhere in this issue. The work of collecting this material has occupied most of the time of a good-sized staff of specialists for about two months, and the returns have been verified with great care and at considerable cost. Because of the very thoroughness of this work, however, it is important to get a general summary of these different collections of detail figures. The review of the principal annual reports of the year, illustrated by means of graphic diagrams, gives a good general picture of the fiscal year ended June 30; but, unfortunately, this fiscal year mixes up two quite distinct periods. From June 30, 1908, until January 1, 1909, recovery was relatively slow; from January 1, 1909, until June 30, 1909, the recovery was very rapid.

The new construction during the calendar year 1909 amounted to approximately 3,748 miles; the smallest increase, with the single exception of the year 1908, in a decade. The conditions under which this mileage was built were quite different from the 1908 conditions, however. In that year the characteristic feature of the construction was the work on great projects like the Chicago, Milwaukee & Puget Sound, which had been financed and begun in better times, and were being pushed through to completion as rapidly as possible to utilize the low prevalent cost of labor and materials and to make available the funds tied up in construction. This year, however, the mileage has been built by a much greater number of companies, and no one company, with the exception of the Western Pacific, has made any very important extension within the border of the United States. The construction record this year is thoroughly healthy; it indicates an entire absence of inflation anywhere, and the new mileage built will certainly not prove a drain on the prosperity of any section.

The equipment orders illustrate the same general tendency. During the early part of 1908 substantially no new equipment was built, except that already contracted for, and a large number of existing contracts were canceled. As a result, the output fell off from 284,188 freight cars in 1907 to 76,555 in 1908. In 1909 approximately 87,000 freight cars were built, a number small as compared with the output of recent years,

but representing new business entirely. At present the equipment companies are busy, and the output in 1910, if there is no setback to the increase of prosperity, ought to be large. A discussion of the orders for rolling stock placed during 1909 is fully covered in another column.

In general, the recovery from the depression of 1907 and 1908 was extremely rapid this year; a situation well illustrated by the fact that there has been no important net surplus of freight cars in the country since August, while during the height of the crop movement there was a net shortage. Last year at this time there was a net surplus of over 220,000 cars; on December 10, 1909, the net surplus amounted to less than 39,000. The average miles-run per freight car per day, including surplus cars, was 22.4 in June, 1909, as against 19.6 in June, 1908; the average ton miles per car per day, including surplus cars, were 276 in June, 1908, and 314 in June, 1909; the average earnings per car per day were \$1.88, including surplus cars, in June, 1908, and \$2.13 in June, 1909.

Viewing the country as a whole, by far the most important changes of the year, from a railway standpoint, have been those affecting the Pacific coast. We have frequently referred in these columns to what may be called the rediscovery of the Pacific coast, about five years ago. The rapid development of the entire region west of the transcontinental divide—especially in Idaho, Washington, Oregon and California—has now made this region the great goal of competitive railway development in the United States. The railway mileage there is not dense, and the regions especially prized are difficult of access, owing to the mountainous character of the country. But the example set by the Chicago, Milwaukee & St. Paul and the Gould lines in the United States, and by the Grand Trunk Pacific and the Canadian Northern, across the border, is being taken up by other companies, while each new development is tending to complicate the traffic situation. During 1909 a splendid low-grade line was opened by the Great Northern and the Northern Pacific along the north bank of the Columbia river, affording those lines their entrance into Portland, Ore. This led to the likelihood of reprisals by the Harriman interests, which were in position to build from some point on the Columbia river toward Tacoma and Seattle. Consequently, a tentative arrangement was made giving the Harriman lines the power to make through routings across the Columbia river bridge and over the Northern Pacific line between Vancouver and South Tacoma, Wash. Heretofore the Harriman territory and the Hill territory have divided at the Columbia river; in the future there will probably be no very marked distinction of this sort; the Hill lines will route freight to Portland and the Harriman lines are likely to route it to Seattle.

Meantime, there has been active warfare between the two for control of the great, hitherto undeveloped, territory of central Oregon, which is extremely rich in natural resources, but has lagged behind in its transportation facilities, partly owing to the topographical difficulties; partly because the competitive situation was in a state of unstable equilibrium. (We discussed this situation rather fully in our issue of November 12, page 905.) The lines which are being built are the Des Chutes Railway, a Harriman project, and the Oregon Trunk Line, a Hill project. The canyon of the Des Chutes river affords the only practicable pass to the high tableland, which both companies desire to reach; and they have been working in close rivalry, with numerous contests, both on the ground and in the courts, for the possession of desirable locations in the canyon. Whether or not the Hill lines propose to strike out for San Francisco when they reach their Oregon stronghold is a question for the future; the present situation is that the two great rivals of the Northwest are now both highly aggressive in a region where the inhabitants have long clamored for railway development.

Following this situation in the Northwest, the next most interesting developments in railway construction and consoli-

dation during the year have been in Mexico. The Southern Pacific has made rapid progress with its line, which is to run from Guaymas to Guadalajara, a distance of 860 miles; the Kansas City, Mexico & Orient has gone ahead with its long diagonal line from Kansas City, across Texas and Mexico, to its port close to the mouth of the gulf of California, although the mileage built by the company in 1909 was all in Texas. Approximately half of this road is now built, and the Mexican government has given it important help as it went along.

Meantime, on February 1, 1909, the National Railroad of Mexico, the Mexican Central, the Mexican International and the Interoceanic of Mexico were combined for purposes of operation, into the National Railways of Mexico, a new company operating 5,262 miles of line and controlled by the government of Mexico through ownership of a majority of the common stock. This is by far the most important transportation development which has ever taken place in Mexico; the government is progressive and is making a highly successful effort to form a compact and efficient railway system out of the rather scattered and not very efficient component parts. The financing of these new lines has been a success and the outlook is promising.

The changes in the railway map east of the transcontinental divide have been highly important this year, although they have been based not so much on new construction as on rearrangement of interests. The Hawley system has made rather sensational progress during the year, having added to its sphere of influence since 1908 the Chesapeake & Ohio, the Missouri, Kansas & Texas, and the St. Louis & San Francisco. The means by which affiliation is carried on in the Hawley group is simply the device of several friendly interests working together through minority ownership, and the Hawley group has not and never has had any effective amalgamation, either for traffic purposes or for purposes of centralized administration. Nevertheless, this group of roads stands quite distinct and embraces now well over 14,000 miles of line.

The breaking apart of the Rock Island-Frisco combination attracted much attention this fall, and little comment need be made upon it in this review, except to point out that the basis on which the Frisco originally went in to the combination was prohibitive; just as in the days when the Frisco was tied to the Santa Fe, impossibilities were asked of it. An extremely good earner, even with its weak branch line mileage, the Frisco has been very unfortunate in the company it has kept; it is probably going to surprise most people by its earning power during the next five years.

The absorption of the Wisconsin Central by the Soo line in the interest of the Canadian Pacific was another of the important changes in the railway map during 1909. In New England, the enormous political obstacles which the state of Massachusetts had placed in the way of the absorption of the Boston & Maine by the New Haven road were finally surmounted, and this absorption was really made complete, although the properties still appear in the guides as units.

In the Central West, the absorption of the Cincinnati, Hamilton & Dayton by the Baltimore & Ohio is of interest. The Baltimore & Ohio has been, traditionally, strong in the middle and weak at the ends; the C., H. & D. ought to be of great assistance at the western end, and it brings with it an important interest in the Queen & Crescent.

In the region connecting the soft coal fields with the South Atlantic states, the effectual completion of the Virginian and of the Carolina, Clinchfield & Ohio has changed to a certain extent the geography of coal distribution and is liable to change it more in the next few years. This situation has been discussed so fully in the *Railroad Age Gazette* that it may be passed over with this brief mention.

There have been an unusual number of changes this year in railway presidencies. Following the death of Mr. Harriman Judge Lovett has been made president of substantially all the roads in the great group which Mr. Harriman has

brought together. Charles M. Hays was made president of the Grand Trunk; N. S. Meldrum, of the Seaboard Air Line; U. H. Broughton, of the Virginian, succeeding H. H. Rogers; H. U. Mudge, of the Chicago, Rock Island & Pacific, and B. L. Winchell, of the St. Louis & San Francisco. Officers representing the Chicago, Burlington & Quincy were elected on the Colorado & Southern; A. A. Allen was elected president of the Missouri, Kansas & Texas; Edmund Pennington succeeded Thomas Lowry as president of the Soo line; Samuel Felton became president of the Chicago Great Western, and I. G. Rawn of the Monon.

In the mechanical field the development of the year that stands out above all others is the largely increased use of the Mallet compound type of locomotive. Not only have these engines reached hitherto unprecedented weights, but they have been applied in several new directions. The freight Mallet compounds recently built for the Atchison, Topeka & Santa Fe have the extraordinary total weight of 462,450 lbs., engine only, of which 412,350 lbs. is on the drivers, while the total weight of engine and tender is 700,000 lbs., and the wheel base of engine and tender is 98 ft. 5½ in. But even more interesting than the enormous weight of these engines is the fact that the Santa Fe has had two Mallet articulated compounds built at the Baldwin works for passenger service, these engines weighing 376,450 lbs., and the total weight of engine and tender being 600,000 lbs.

Another extremely interesting mechanical development of the year closely allied to this has been the conversion by the Great Northern of a number of consolidation locomotives into Mallets, which has been accomplished by ordering new front engines with compound cylinders, which are coupled to the old engines. The year 1909 has also been marked by increased attention being paid to superheating and by very large proportionate increases in the orders of steel equipment, both passenger and freight. Development of large motive power and the perfection of way and structures has also led to some extraordinary train records during the year. On June 22 a Pennsylvania Railroad Class H-8-b engine hauled from Altoona to Enola, Pa., a train of 105 steel cars loaded with 5,544 tons of coal. Several times this fall on the Virginian Railway, the class M-B Mikado engines, weighing 207,450 lbs. on drivers, have hauled trains consisting of 100 of the Virginian Railway Company's steel coal cars, carrying 5,500 tons of coal and a caboose weighing 18 tons, the total weight of the train behind the engine being 7,652 tons. Records of this sort reflect fully as much credit on couplers and draft gear as they do on motive power and permanent way!

Several important decisions have been made during the year by the Interstate Commerce Commission. In the Denver and Spokane cases the commission held that the rates to certain interior points were too high, as compared with the rates to distant points governed by water competition, although recognizing the force of the water competition and its effect upon the rate structure. What the commission held in the Spokane case in effect was that while it could not say that the Spokane rates were too high simply because the rates to Seattle were lower, yet the rates on the Great Northern, as a whole, were too high, and the Spokane rates were furthest out of line. The reductions in commodity rates were not put into effect, pending an appeal.

The commission likewise ordered the Portland gateway to be opened, holding that a company, although offering adequate service over its own lines, could not try to compel the public to travel over its lines by refusing to make all reasonable joint arrangements with some other competing line.

Both Des Moines and Indianapolis have made a number of complaints as to discrimination, and the commission has ordered reductions on nearly all classes of freight on the proportion received by the Chicago, Rock Island & Pacific on its share of the haul of goods bound from the East to Des Moines.

One interesting occurrence during the year which has generally been overlooked in spite of its important bearing on the attitude of governments, both state and national, to the question of railway valuation, has been the fact that the Minnesota Railroad Commission actually completed a full valuation of the railways in the state last winter, and found that 12 out of the 19 roads in the state could not be reproduced for their present capitalization.

Last spring the Supreme Court held the commodity clause of the Hepburn Act constitutional, but under such an extraordinary theory and construction that the clause is in effect wiped out of existence. The court held that a railway company cannot haul a commodity which it owns at the time it hauls it, but it held that this prohibition does not apply to commodities manufactured, mined, produced or owned by a corporation in which a railway is a stockholder. The railway interested in coal mines, therefore, has the option either of selling the coal at the mines, as is done by the Delaware & Hudson, or of forming a separate company, controlled by stock ownership, as the Delaware, Lackawanna & Western has recently done.

During 1909, South America has also had one very important piece of railway development to recount; the east and west coasts are now connected by rail, and Argentina and Chile are tied together, by means of the Uspallata tunnel, through the Andes. The headings of this tunnel met on November 27, and it is expected that rail communication will be established next spring. Hitherto Argentina and Chile have been far more widely separated than New York and Hamburg in time of actual communication.

MOTIVE POWER AND ROLLING STOCK ORDERED IN 1909.

The statistics of motive power and rolling stock ordered by steam railways during 1909 which we have compiled present a striking contrast to the statistics which we compiled for 1908. The number of locomotives ordered in 1908 was 1,182 and in 1909 the number was 3,350; the number of passenger cars ordered in 1908 was 1,319 and in 1909 it was 4,514; the number of freight cars ordered in 1908 was 62,669 and in 1909 it was 189,360. The figures show that there has been a marked revival in the demand of railways for new equipment and in their purchasing power, and that the car and locomotive manufacturing concerns are profiting by it in a very substantial and gratifying measure.

While the figures for 1909 are much better than the figures for 1908, a comparison of the figures for 1909 with those for a substantial period of years leads to somewhat less satisfactory conclusions. We began to keep this record in 1901. The total number of locomotives ordered in the eight years, 1901-1908, inclusive, was 31,397, an average of 3,924 per year. The total number of passenger cars ordered during the same period was 20,662, or 2,583 per year. The total number of freight cars ordered during the same period was 1,500,194, or an average of 187,524 per year. It will be seen that the average number of locomotives ordered during this period exceeds the number ordered in 1909; and that the average number of freight cars ordered during this period almost exactly equals the number ordered in 1909, while the number of passenger cars ordered in 1909 greatly exceeds the average number ordered during the preceding eight years. During the three years, 1905-1907, inclusive, the average number of locomotives ordered per year was 5,130; the average number of passenger cars ordered per year was 2,827, and the average number of freight cars ordered per year was 267,780. These figures show that while the demand and orders for freight cars and locomotives during 1909 were vastly greater than in the preceding year they were about the same as for the preceding period of eight years and were very greatly less than during the three highly

prosperous years immediately preceding the panic and depression.

The orders for passenger cars, on the other hand, far exceed the average of preceding years; in fact, the orders placed in 1909 much exceed those placed in any previous year since this record has been kept. In order to have a clear understanding of the figures it must, of course, be borne in mind that the capacity of locomotives and of freight cars has been rapidly increasing so that not so many are needed as formerly to handle a given amount of business, while there has not been an equivalent increase in the capacity of passenger cars or in the number of passengers handled per car. No doubt the fact that, while freight business fell off heavily following the panic, passenger business continued to hold its own also has a connection with the large relative increase in the orders for passenger equipment.

While equipment orders placed during the entire year are smaller than in the three years before the panic, the orders placed during the last half of 1909 compare very favorably with the orders placed in previous years. The railways did not get to buying largely in the first half of the year. One of the notable facts is that the orders placed by the large systems have been much bigger and more numerous relatively than the orders placed by the smaller roads. Taking the smaller roads as a class, it may be said with substantial accuracy that they are only just now beginning to buy. This is due, no doubt, to the circumstance that the larger roads recovered from the effects of the panic much more rapidly than the smaller railways.

The prominent feature of locomotive development during the past year is seen in the large number of Mallet locomotives which has been ordered, the general distribution of these orders and the enormous size and weight which this type of locomotive has attained. One hundred and forty-five Mallet engines were ordered by twenty-one roads, and the largest one, for the Santa Fe, weighs 462,450 lbs.; the engine and the tender weighing 700,000 lbs. This engine has a weight on drivers of 412,350 lbs. and the tractive effort is 108,000 lbs. The Mallet passenger engine, also built by the Baldwin Works for this line, weighs 376,450 lbs., with 268,000 lbs. on drivers, and has a tractive effort of 57,000 lbs. These engines include some novelties in boiler construction, the fire box design being that of Jacobs and Schupert. The boiler of the passenger engine has a total length of 52 ft. 5 in., while the tubes are 19 ft. 2 1/4 in. long, and the shell beyond the front tube sheet contains a superheater, a reheater for steam from h.p. to l.p. cylinders, a feed-water heater with tubes 7 ft. long and smokebox 5 ft. long. A large section of the front boiler shell is also used in other Mallet locomotives of recent design, and it is a prominent feature in the front units which are being built for the purpose of converting old freight locomotives into Mallets and where low-pressure cylinders are provided for obtaining a compound engine. An example of this practice was illustrated in our issue of December 17, 1909. In this instance the feed-water heater forms a section of the shell 8 ft. long.

The economy which should be obtained from such a large amount of heating surface is not being realized because the feed-water is fed to the heater by an injector, and tests of such heaters show that the increase in temperature due to the heater is only 45 deg. F. The water delivered to the heater attains a high temperature from the live steam in the injector and it can absorb but little more before reaching the boiling point. It is evident that in order to obtain proper economy from locomotive feed-water heaters the water should be delivered at tank temperature so that there will be as large a difference as possible between the temperature of the hot gases and that of the feed-water entering the heater. As it is expected that an economy of 15 per cent. will be derived from the feed-water heater feature of the converted Mallets an increase in the temperature of the water by this means

of 150 deg. should be obtained, which means that a pump must be substituted for the injector. This question has an important bearing in its relation to the practice of building converted Mallet locomotives which has already commenced and which will doubtless extend to large numbers during the coming year, as the economy derived from the heater will be depended on for a good portion of the additional heat absorbed by the large new cylinders and the additional power required for the heavier locomotive.

The use of the superheaters on locomotives in the United States is now growing rapidly, as they have been so improved that there is little trouble due to leaky joints and the men are better trained in the proper care of them, especially in keeping fire tubes well cleaned from soot. The improvements in the field tube type of superheater is taking the form of a broad steam pipe in its usual position in the smokebox, this pipe having a partition divided into saturated and superheated compartments. The tubes are carried out into the smokebox for attachment to the steam pipes, and in this way a large amount of superheat is obtained from the gases in the smokebox which would otherwise be wasted.

The three-cylinder simple locomotive which was built by the Reading for high speed service has been showing a good performance, and the Rock Island's four-cylinder simple balanced locomotive is another example which shows the tendency toward the use of more than two cylinders for fast passenger work without compounding.

The construction of electric locomotives has reached a point where they are capable of competing with the largest steam locomotives for freight or passenger service. The new electric locomotive built for the Pennsylvania for the New York tunnels have in the two units a total weight of 332,000 lbs., with 208,000 lbs. on drivers, and a guaranteed tractive effort of 60,000 lbs. The maximum capacity of the locomotive will develop 4,000 horse-power and it will be called upon to start a train of 550 tons of trailing load on the 2 per cent. tunnel grades. It must also be capable of running at a speed of 60 miles an hour on level track. The New Haven is preparing for electric traction in freight service and a large sample locomotive for this purpose has been built.

The Walschaerts valve gear, which is used on the majority of large locomotives built in the past year, is finding an active competitor in the Baker Pilliod gear, which has neither eccentric nor link, but all the functions of a good valve gear. This was illustrated in our issue of January 15, 1909.

The majority of box cars built in 1909 have steel underframes and the bulk of gondola and coal cars are entirely steel construction. Nearly all these cars are of high capacity, 40 to 50 tons. There have been no important improvements in the general design of steel freight cars, but the most notable feature is the more general use of rolled steel wheels in place of chilled cast-iron wheels. Four large works are now busily engaged in making steel freight wheels and the Steel Corporation, since its purchase of the Schoen Works, is greatly enlarging its capacity.

Little progress has been made in finding an efficient protective coating for painting steel freight cars, and this is the most important improvement which is necessary to make them entirely satisfactory.

The year 1909 is memorable as one in which large numbers of steel passenger cars have been built and large numbers ordered and not yet filled. The bulk of the passenger cars now on orders have steel underframes; many of them have steel superstructure with wood siding or inside finish, while several lines are adding to their equipment large numbers of cars which are made entirely of steel. In this development there is the unfortunate feature that the weight of passenger cars is becoming doubly great, and wooden coaches with steel underframes and six-wheel trucks now weigh 60 tons, which was not long ago regarded as a large figure for a Pull-

man sleeper. One of the principal advantages of steel construction for passenger cars is the possibility of obtaining greater strength without materially increasing the weight, but proper limits of weight are too easily disregarded and the design of steel passenger equipment should take more account of the need of avoiding excessive weight. Marked improvements have been made in the inside finish and decoration of coaches and sleepers, and criticisms about bad taste in car decoration are no longer heard, but it is changed to genuine admiration of the beautiful interior finish which has helped to make travel a delight.

The comfort of the passenger has not been neglected and considerable progress has been made in the heating and ventilation of passenger cars. So far as car equipment is concerned, travel is also made safer by the improvements which have been made in train brakes. It is a great satisfaction, not only for railway officers but to the traveling public, to know that these improvements by the Westinghouse Air Brake Company have made the brakes so efficient that they have more than kept pace with the increase in weight of cars and higher speeds. A train of six cars, weighing 350 tons, with an engine weighing 195 tons, total 545 tons, can now be stopped, when running on level at 60 miles an hour, in 1,200 feet without shock or jar, which must be regarded as a remarkable performance.

RECEIVERSHIPS AND FORECLOSURES IN 1909.

The number of roads that went into the hands of receivers in 1909 was 5; their aggregate mileage, 859; their stock, \$30,549,000; their funded debt, \$47,546,000; and their total capitalization, \$78,095,000. The figures (which do not include electric railways) show that the steam roads in general, as a result of several years of conservative financing, were on a firm foundation prior to the panic of 1907, and while a large mileage became bankrupt in 1908 the recovery from the effects of the panic was rapid. This is the thirty-fourth year in which this record has been published; and the mileage of roads becoming bankrupt was larger in 26 years than in 1909 and smaller in 7 years. The aggregate capitalization (stock and bond) of railways going into receiverships was larger in 22 of the years since this record has been kept than in 1909, and smaller in 11 years.

Receiverships Established in 1909.

The following is a list of steam roads for which receivers were appointed in 1909:

Railways.	Mileage.	Funded debt.	Stock.
Atlanta, Birmingham & Atlantic ...	572	\$18,533,000	\$35,000,000
Alabama Terminal Co. ....	...	2,445,000	3,000,000
Georgia Terminal Co. ....	...	3,000,000	1,500,000
Yellowstone Park R. R.	22	696,000	696,000
Chicago, Peoria & St. Louis .	255	5,875,000	7,350,000
Total	859	\$30,549,000	\$47,546,000

*Mileage included in Atlanta, Birmingham & Atlantic.

John P. Ramsay, president, and H. M. Merriam were appointed receivers of the Chicago, Peoria & St. Louis Railroad in July at the instance of the trustee of the second mortgage bonds, interest on which was in default. The Chicago, Peoria & St. Louis Railway has been organized to take the road over after foreclosure, the date for which will be set soon. The road suffered severely from the effects of the panic and depression, and from the 2-cent fare legislation in Illinois which it has brought suit to have set aside as confiscatory.

The Yellowstone Park Railroad was placed in the hands of receivers in July, and in November its property was sold at foreclosure sale to the Montana, Wyoming & Southern. The road runs from Clark's Ford, Wyo., to Bridger.

H. M. Atkinson, president of the Atlanta, Birmingham & Atlantic, and P. S. Arkwright were appointed receivers of this road in January. They were subsequently appointed receivers also of the Georgia Terminal Company of Atlanta, Ga., and the Alabama Terminal Company of Birmingham,

Ala., which the A. B. & A. controlled. The receivership was established owing to the failure of the A. B. & A. to pay the interest on \$8,173,000 bonds. The insolvency of the controlled properties was a result of the failure of the parent property. S. F. Parrott later was appointed receiver to succeed Mr. Arkwright.

The Pontiac, Oxford & Northern (mileage, 112; stock, \$1,000,000; funded debt, \$400,000), which had been in a receiver's hands, passed into the control of the Grand Trunk.

The Cincinnati, Hamilton & Dayton (mileage, 1,037; stock, \$16,000,000; bonds, \$5,460,700) is passing into the control of the Baltimore & Ohio and will soon emerge from the receivership.

The number, mileage and capitalization of the railways that have failed since 1875 are as follows:

Summary of Receiverships for 34 Years.

Year.	No. of roads.	Miles.	Bonds and stocks.
1876.....	42	6,662	\$467,000,000
1877.....	38	3,637	220,294,000
1878.....	27	2,320	92,385,000
1879.....	12	1,102	39,367,000
1880.....	13	885	140,265,000
1881.....	5	110	3,742,000
1882.....	12	912	39,074,000
1883.....	11	1,090	108,470,000
1884.....	37	11,038	714,755,000
1885.....	44	8,856	385,460,000
1886.....	13	1,709	70,346,000
1887.....	9	1,046	90,318,000
1888.....	22	3,270	186,814,000
1889.....	22	3,803	99,664,000
1890.....	26	2,963	105,007,000
1891.....	26	2,159	84,479,000
1892.....	36	10,508	357,692,000
1893.....	74	29,340	1,781,046,000
1894.....	38	7,025	395,791,000
1895.....	31	4,089	369,075,000
1896.....	34	5,441	275,597,000
1897.....	18	1,537	92,909,000
1898.....	18	2,069	138,701,000
1899.....	10	1,019	52,285,000
1900.....	16	1,105	78,234,000
1901.....	4	73	1,627,000
1902.....	5	278	5,835,000
1903.....	9	229	18,823,000
1904.....	8	744	36,069,000
1905.....	10	3,593	176,321,000
1906.....	6	204	55,042,000
1907.....	7	317	13,585,000
1908.....	24	8,009	596,359,000
1909.....	5	859	78,095,000

Total, 34 years 712 128,498 \$7,370,526,000

The large increase in roads sold at foreclosure during 1909 is a reflex of the panic of 1907 and the subsequent depression. The number sold at foreclosure was 12; their mileage, 2,629; their stock, \$93,937,000; their funded debt, \$156,096,000; and their aggregate capitalization, \$250,033,000. In only nine of the 34 years since this record has been kept was the capitalization of roads sold at foreclosure larger, although in 18 years the mileage was larger. The roads sold at foreclosure were the following:

Sales at Foreclosure in 1909.

Railways.	Mileage.	Funded debt.	Stock.
Newton & Northwestern.....	102	\$3,060,000	\$2,500,000
Sierra Valleys.....	37	300,000	942,000
Mobile, Jackson & Kan. City.....	402	3,964,000	4,000,000
Alaska Central.....	53	4,000,000	5,960,000
Newport & Wickford.....	4	72,000	100,000
Colorado & Northwestern.....	48	1,000,000	1,000,000
Western Maryland.....	543	58,719,000	15,685,000
Chicago Great Western.....	818	.....	107,033,000
Western Illinois.....	2	100,000	100,000
Toluca, Marquette & Northern.....	31	970,000	150,000
Yellowstone Park Railroad.....	32	696,000	696,000
Norfolk & Southern.....	557	21,056,000	17,930,000

Total..... 2,629 \$93,937,000 \$156,096,000

The Western Maryland, which was one of the most important roads that passed into the hands of receivers in 1908, was sold at foreclosure on November 19 to representatives of the bondholders' committee for the upset price of \$6,500,000.

The Chicago Great Western, another of the more important of the roads that failed in 1908, was sold at foreclosure on August 21 to a syndicate headed by J. P. Morgan for the upset price of \$12,000,000.

The Norfolk & Southern, another of the roads that went into receivers' hands in 1908, was sold at foreclosure at Norfolk on December 7 to a reorganization committee for \$8,500,000.

The Alaska Central was sold at foreclosure at Valdez,

Alaska, on October 11 to F. G. Jemmett, representing the interests that liquidated the Sovereign Bank of Toronto, which held \$2,400,000 of the \$4,000,000 bonds. The purchase price was \$600,000. The property was resold to a new company, the Alaska Northern.

The Mobile, Jackson & Kansas City, and the Gulf & Chicago were sold at foreclosure sale at Decatur, Miss., on August 23 to Neil A. Weathers, the purchase price being \$3,200,000. It was announced that they would be consolidated under the name of the New Orleans, Mobile & Chicago, a company organized in 1908 by the bondholders of the old companies under the laws of Mississippi.

The Newton & Northwestern was bid in by the Old Colony Trust Company of New York at a master's sale at Boone, Ia., on January 5, for \$1,000,000. It was controlled by the Fort Dodge, Des Moines & Southern, and this company retains control, the Old Colony Trust Company having acted for it.

The Sierra Valleys was bid in at foreclosure on January 20 by the Nevada, California & Oregon, which already controlled it, the price being \$75,000. It runs from Plumas Junction, Cal., to Mohawk, 37 miles, and the N. C. & O. runs from Reno, Nev., north through Plumas Junction to Alturas, Cal.

The Colorado & Northwestern, which was sold at foreclosure at Boulder, Colo., was bid in by the stockholders' reorganization committee, and was turned over on April 1 to a new company, the Denver, Boulder & Western. The Western Illinois, a road projected to extend from Dahinda, Ill., to McNabb, a distance of 90 miles, but on which only 9 miles was graded and only a little track laid, was sold at foreclosure on September 13 to David Wint, of Kewanee, Ill. The Toluca, Marquette & Northern was sold to the Rutland, Toluca & Northern, which had been incorporated to take it over. The Washington, Potomac & Chesapeake, projected to be built from Washington, D. C., to Pt. Lookout, is advertised to be sold at foreclosure in the District of Columbia on January 11, and in Maryland on January 11. Twenty miles are in operation; stock, \$4,000,000; bonds, \$100,000.

The Seaboard Air Line (mileage, 2,611; stock, \$62,516,000; bonds, \$64,884,000), which was among the roads which went into receivers' hands in 1908, went through reorganization without foreclosure, being returned to its stockholders in August.

The Chicago Terminal Transfer (mileage, 101; stock, \$30,000,000; bonds, \$16,239,000) is advertised to be sold at foreclosure in Chicago on January 6 for an upset price of \$15,140,000. The Baltimore & Ohio is in control, and probably will bid it in.

The Charlotte, Monroe & Columbia (mileage, 18; stock, \$48,000; bonds, \$70,000) was taken from the receivers' hands without foreclosure and sold to "Ohio" parties. The Texas Short Line (mileage, 11; stock, \$10,000; bonds, \$175,000) was taken out of the receiver's hands and turned over to a new management. The San Diego, Cuyamaca & Eastern (mileage, 28; stock, \$769,000; bonds, \$550,000), suit for whose foreclosure was begun in 1908, was taken over by a new company, the San Diego & Cuyamaca, on September 1. The receiver of the Marietta, Columbus & Cleveland (mileage, 45; stock, \$250,000; bonds, \$250,000) was discharged without a foreclosure, and the company resumed possession of the property. The road runs from Marietta, Ohio, to Palos.

The following is the record of foreclosure sales for 34 years:

Summary of Foreclosure Sales in 34 Years.

Year.	No. of roads.	Miles.	Bonds and stocks.
1876.....	30	3,840	\$217,848,000
1877.....	54	3,875	198,984,000
1878.....	48	3,906	311,631,000
1879.....	65	4,909	243,288,000
1880.....	31	3,775	263,882,000
1881.....	29	2,617	137,923,000
1882.....	16	867	65,426,000
1883.....	18	1,354	47,100,000
1884.....	15	710	23,504,000
1885.....	22	3,156	278,394,000
1886.....	45	7,687	374,109,000
1887.....	31	5,478	328,181,000

1888.....	19	1,596	64,555,000
1889.....	25	2,930	137,815,000
1890.....	29	3,825	182,495,000
1891.....	21	3,223	169,069,000
1892.....	28	1,922	95,898,000
1893.....	25	1,613	79,924,000
1894.....	42	5,643	318,999,000
1895.....	52	12,831	761,791,000
1896.....	58	13,730	1,150,377,000
1897.....	42	8,675	517,680,000
1898.....	47	6,054	252,910,000
1899.....	32	4,204	267,534,000
1900.....	24	3,477	190,374,000
1901.....	17	1,139	85,808,000
1902.....	20	693	39,788,000
1903.....	13	555	15,885,000
1904.....	13	524	28,266,000
1905.....	6	679	20,307,000
1906.....	8	262	10,400,000
1907.....	6	114	13,777,000
1908.....	3	138	2,547,000
1909.....	12	2,629	250,033,000
Total, 34 years	946	116,720	\$7,146,502,000

ANNUAL REPORT OF THE INTERSTATE COMMERCE COMMISSION.

The abstract of the twenty-third annual report of the Interstate Commerce Commission, which was given in our last issue, was incomplete, the copy having been delayed so that it reached us just as we were going to press; and certain parts of the report which we wish to give at considerable length must be deferred still another week, because of the large amount of space taken up in this number of our annual reviews. We give here a summary of the report.

The most bulky chapters are those dealing with prosecutions for violation of the Acts to Regulate Commerce, decisions of the courts in criminal cases, which are carefully digested, and suits by carriers to annul orders of the commission. The principal cases in this last class have been noticed in the *Railroad Age Gazette*. The most prominent feature of the report is the plea for additional power. In asking for authority to make a physical valuation of railways; to prevent advances in rates until an investigation can be made; to establish through routes, and to control the capitalization of railways, the commission is careful in its arguments, and most of them have an air of studied conservatism. Moreover, there are some good reasons why laws should be passed on all of these subjects; but the fact remains that as a whole these demands will serve mainly as pegs on which to hang whatever radical propositions any member may wish to bring up in Congress.

In asking for authority to make general regulations relating to the movement of traffic, the commission cites the good results which have followed the adoption by the commission, under authority from Congress, of the rules prepared by the railways for the transportation of explosives. No accident has yet occurred in the transportation of these dangerous articles when carried in the manner required under these rules. It is argued that the commission ought to have power to prescribe demurrage rules and regulations as to furnishing the right kind of cars for shippers. Since this report was issued the commission has made public its approval of the demurrage rules approved at Washington last month by the convention of state railway commissioners. So long as the commission is guided by the actual needs, economies and equities of the railway service as closely as it was in this matter, it will, of course, have the hearty support of all public-spirited railway officers. The plea for the restoration of the power to make investigations on its own motion, which seems to have been withdrawn by the amendments of 1906, but which nevertheless still stands in section 13 of the law, will also be unopposed by railway men, no doubt; for the essence of the commission's most important function is to deal with questions which are important but which yet are not susceptible of formal treatment.

In the year ending November 30, the number of tariffs filed with the commission was 184,303, and yet the number in effect on that date was materially less than on November 30,

1908. It is estimated that on the principal roads the decrease in the number of tariffs has been 27 per cent. This change, which has resulted in considerable relief to the tariff bureaus and to station agents, has been brought about by the strict regulations prescribed by the commission. This enormous task of revising and reprinting has been carried out at great expense; but the commission quotes the testimony of freight traffic managers and of shippers to the marked benefits which have accrued. On one of the largest roads the number of overcharge claims is 25 per cent. less than in 1907. A shipper doing a very large business says he notes a very great decrease in his overcharge claims. Formerly his claims suspense account reached \$100,000 a year, but for 1909 it will not exceed \$7,500. The claims which he made in 1905 numbered 1,008, while in the first nine months of 1909 the number was 205. The commission has rejected 9,581 tariffs because they did not comply with the regulations. Many requests have been made for leave to change rates in less than 30 days, and about four-fifths of those received have been granted. The old conditions, in which the average person is unable to learn from a tariff what is the lawful rate on his shipment, have not been entirely cured; but there has been great improvement, and the improvement is still going on.

The chapters on safety appliances and on the work of the Bureau of Statistics we must take up in a later issue.

Under the head of accidents the commission summarizes the facts which have been given in the quarterly bulletins and which have been published in the *Railroad Age Gazette*. The impossibility of securing full and satisfactory reports under the present law is pointed out, and the need of authority to investigate accidents is again urged.

The work of the Block Signal and Train Control Board is made the subject of a separate report, a summary of which is given in another column.

The operation of the hours-of-service law has been carefully watched. The railways are required to make monthly reports of all cases where men work beyond the statutory number of hours, but a few companies have refused to do this and the question is before the courts. During the year 336 complaints of violation of this law have been received, the large majority of which have been settled by correspondence; but ten cases are being prepared for submission to district attorneys. Several of these cases are of two telegraph offices near together at the same station, one office being operated during the day and the other during the night. The roads claim that such stations are not one office within the meaning of the law. In a case against the Atchison, Topeka & Santa Fe the federal court decided that closing an office for a short time during a period of 24 hours does not remove it from the class of offices "continuously operated night and day." This case has been appealed.

NEW CONSTRUCTION IN 1909.

Official returns from the majority of the railway companies in the country, supplemented by figures furnished by the state railway commissions and from our own current records, show that approximately 3,748 miles of new main track were built in the United States during the calendar year 1909, as compared with 3,214 miles for 1908. The 1908 record was the smallest since 1897, when 2,109 miles were built. These figures do not include new second, third or fourth track, sidings or electric lines. The net increase during the year is about 16½ per cent., and 28 per cent. less mileage was built than in 1907.

This year, the new mileage is more evenly balanced than usual between a considerable number of companies. The Western Pacific holds the 1909 record, having laid track this year on 288 miles in Nevada and 142 miles in California; a total of 430 miles. Last year the Chicago, Milwaukee &

Puget Sound led with 790 miles of new track; this year it added 98 miles.

The Southern Pacific was second in 1909, with 127 miles in California, Arizona and Oregon, and 230 miles in Mexico. The Great Northern built a total of 132 miles in the United States and Canada, while the Kansas City, Mexico & Orient added 80 miles in Texas, between Sweetwater and San Angelo. There remains about 510 miles in the United States and 290 miles in Mexico yet to be built to complete the through line of the Kansas City, Mexico & Orient from Kansas City, Mo., southwest to Topolobampo, Mex., on the Pacific. This line and the new cut-off under construction for the Santa Fe, from Texico, N. M., southwest to Coleman, Tex., some 300 miles, are the longest lines under way in the United States at the present time.

The states west of the Mississippi river built 2,467 miles in 1909, as compared with 2,455 miles in 1908; an increase less than $\frac{1}{2}$ of 1 per cent. East of the Mississippi, 1281 miles were laid this year; an increase of 520 miles, or 68 $\frac{1}{3}$ per cent. In the report from 43 states and territories, including Alaska, where 48 miles of track were laid, Texas, which was sixth last year, leads the list, with 666 miles, closely comparable with 1906, when 635 miles were laid. In 1908, only 166 miles of road were built in Texas, by 8 companies, while this year, 23 companies reported new mileage. The Texas situation is interesting. A letter from the state engineer, printed by us last year, frankly recognized the fact that frenzied legislation had driven capital away from that state; this attitude of hostility is changing fast. We venture to predict that the better and more conservative element will have more voice in the government during the next few years than it has had since the wave of radicalism set in.

Nevada, which built 81 miles last year, is second this year with 303 miles, and California is third, with 247 miles, most of which was added by the Western Pacific. No other state reported over 200 miles. Washington, Georgia, Oklahoma, Oregon, West Virginia, Montana, North Carolina, Kentucky, Pennsylvania, Louisiana and Florida, in descending order, also built over 100 miles of main line in 1909. The largest decrease reported is in Montana, where only 118 miles were built, as compared with 537 miles in 1908. Arkansas, Idaho, Virginia and Washington also show decreases of 100 miles or more from their 1908 records. No new mileage was reported in Connecticut, Delaware, Iowa, Massachusetts, North Dakota, Rhode Island or South Dakota. In Canada 1,488 miles,* were built in 1909, an increase of 240 miles or over 19 per cent. as compared with 1908, when 1,248 miles were added. The increase is due to the extensive building of the Grand Trunk Pacific, building east of Winnipeg under the name of the National Transcontinental. On this entire project 623 miles were added. The Canadian Pacific built 395 miles, and the Canadian Northern lines, 344 miles. On the western section the Grand Trunk Pacific has work under way on 438 miles, and surveys have been made for 516 miles additional. East from Winnipeg, Man., work is under way on 1,244 miles. The Canadian Pacific and the Canadian Northern also have a large amount of work projected or under way.

In Mexico only 281 miles were reported, by three companies. Of this the Southern Pacific added 230 miles in the states of Sonora, Sinaloa and Jalisco, in the territory of Tepic and in Lower California. This is a decrease of 154 miles, or over 34 per cent., as compared with the 435 miles added in 1908.

The following table shows our figures for mileage built in the United States during the last seventeen years:

1893.....3,024	1899.....4,569	1905.....4,388
1894.....1,760	1900.....4,894	1906.....5,623
1895.....1,428	1901.....5,368	1907.....5,212
1896.....1,692	1902.....6,026	1908.....3,214
1897.....2,109	1903.....5,652	1909.....3,748
1898.....3,265	1904.....3,832	

*For the year ended June 30, 1909, the Comptroller of the Canadian Department of Railways and Canals reports that 1,138 miles were built.

NEW BOOKS.

A Study of the Open-Hearth. Published by the Harbison-Walker Refractories Co., Pittsburgh, Pa. 91 pages; 4 $\frac{1}{2}$ in. x 6 $\frac{1}{2}$ in.; leather.

This book contains a treatise on the open hearth and the manufacture of open hearth steel. A glance at the chapter headings will give a good idea of the book's contents, these headings being: steel; description of open hearth furnace; details of furnace; fuels; acid open hearth process; recarburization; basic open hearth process and special process. This book is convenient in size and should prove valuable as a ready desk reference.

Concrete Pottery and Garden Furniture. By Ralph C. Davison, Assistant Secretary, Concrete Association of America. 196 pages; 5 in. x 7 $\frac{1}{2}$ in.; 140 illustrations. Price, \$1.50. Munn & Co., New York.

This book is designed to furnish details of the use of ornamental concrete. While the particular application of concrete which the book takes up is highly specialized, the methods described give valuable suggestions for other ornamental concrete work. The method of using wire forms, and also the development of color work in cement, are particularly interesting.

Concrete Inspection. By Charles S. Hill, C.E. 179 pages; 3 $\frac{1}{2}$ in. x 6 in. Myron C. Clark Publishing Co., Chicago and New York.

The author gives a schedule of the duties of concrete inspection, with such specific instructions as are necessary. He explains the reasons and importance of each rule to be followed. He takes up in order the inspection of concrete materials, of proportioning and mixing. He then takes up in the chapters that follow form work and the methods of reinforcement and of depositing and finishing concrete. There are special chapters on sidewalk construction, concrete piles and cast concrete work. The last chapter is a convenient compilation of standard and typical specifications.

Concrete. By John C. Trautwine, Jr., C.E., and John C. Trautwine, 3d, C.E. 200 pages; 5 in. x 7 $\frac{1}{2}$ in.; illustrated. Price, \$2.00. John Wiley & Sons, New York.

This is a reprint of the articles on concrete which are a part of the nineteenth (1909) edition of the Civil Engineers' Pocket Book. It includes cement, sand and mortar. The same standard which the publishers have maintained in the Civil Engineers' Pocket Book is adhered to; therefore, it gives accurately, in convenient and condensed forms, the essentials of present practice and knowledge. Two features are: the Selected Results of Experiment and Practice, and the Digest of Specifications. As the theory of concrete construction is not yet so established nor so fully understood as older branches of engineering, the book is concerned chiefly with the practical side of the work, although the commonly accepted theories are given.

Tables and Diagrams of the Thermal Properties of Saturated and Superheated Steam. By Lionel S. Marks, M.M.E., and Harvey N. Davis, Ph.D. 106 pages; 6 $\frac{1}{2}$ in. x 9 in.; cloth board. Price, \$1.00.

This volume contains a set of tables of the properties of saturated and superheated steam, based on most recent investigations. The tables for saturated steam are probably correct to one-tenth of one per cent. within the range of steam pressures usual in engineering practice. The properties of superheated steam are tabulated for every pound pressure and for every ten degrees of superheat, within a range which exceeds present practice. All the information relating to superheated steam of any pressure is given on one double page, an arrangement which permits the immediate finding of any desired quantity. Supplementary tables extend the superheated steam tables to very high temperatures, and give the properties of water, metric conversion factors, Napierian logarithms and other quantities. Two diagrams, 16 in. x 20 in., are enclosed in a pocket of the back cover, one of which is the total heat-entropy diagram and the other the total heat-pressure diagram for saturated and superheated steam.

RAILWAY BUILT IN 1909.

UNITED STATES.

Table Showing Mileage Built in 1909, Classified by States.

	No. of Cos. building.	1909.	No. of Cos. building.	1908.
Alabama	6	58.67	2	54.60
Alaska	1	48.00	..	..
Arizona	4	97.74	..	..
Arkansas	4	39.70	3	176.52
California	9	247.40	11	314.08
Colorado	3	98.13	3	77.72
Connecticut	..	..	..	..
Delaware	..	..	..	..
District of Columbia	1	3.81	..	..
Florida	7	100.81	2	27.00
Georgia	7	146.30	4	95.75
Idaho	3	39.49	4	164.94
Illinois	1	17.74	2	10.71
Indiana	1	7.68	2	15.01
Iowa	..	..	2	18.40
Kansas	3	87.44	..	..
Kentucky	8	108.02	3	34.29
Louisiana	5	102.09	5	110.72
Maine	1	78.00	..	..
Maryland	1	4.68	..	..
Massachusetts	..	..	..	..
Michigan	8	72.86	4	71.00
Minnesota	6	85.27	5	130.27
Mississippi	2	36.60	1	8.50
Missouri	2	11.84	3	20.98
Montana	4	118.70	3	537.03
Nebraska	2	13.13	2	52.58
Nevada	2	303.00	2	81.10
New Hampshire	1	1.55	..	..
New Jersey	3	33.95	3	4.23
New Mexico	1	35.00	1	24.50
New York	4	45.51	3	41.12
North Carolina	10	111.92	4	70.70
North Dakota	..	..	1	20.00
Ohio	3	18.41	1	10.00
Oklahoma	6	144.00	1	17.90
Oregon	9	134.30	4	79.09
Pennsylvania	8	104.27	4	20.39
Rhode Island	..	..	1	1.83
South Carolina	3	54.00	1	4.00
South Dakota	..	..	1	18.20
Tennessee	3	56.69	7	93.58
Texas	23	668.43	8	165.57
Utah	1	18.00	1	3.00
Vermont	1	0.94	..	..
Virginia	4	67.19	5	168.06
Washington	6	162.58	4	363.00
West Virginia	8	120.26	1	22.20
Wisconsin	4	31.18	2	11.73
Wyoming	1	15.00	3	74.22
Total	190	3,748.28	119	3,214.02
Canada	10	1,487.69	10	1,248.56
Mexico	3	281.26	5	435.25
Panama	1	9.50	1	7.00

UNITED STATES.

ALABAMA.

Alabama, Tennessee & Northern—South of Cochrane.....	24.00
Atlanta, Birmingham & Atlantic—Pelham to Mulga.....	28.00
Illinois Central—North Birmingham.....	0.90
Louisville & Nashville—Kennedy Creek branch, Arlo to Doeray.....	2.00
Southern—Not specified.....	1.77
Sumpter & Choctaw—Lillita to Edna.....	2.00
	58.67

ALASKA.

Copper River & Northwestern—Head of Abercrombie to Tlekel river.....	48.00
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ARIZONA.

Arizona & Colorado (So. Pac.)—Pearce south toward Naco, 36.20 miles; branch to Gleason, 6.46 miles; total.....	42.66
Colorado & Mexico (E. P. & S. W.)—Douglas Junction to Courtland.....	35.70
Gila Valley, Globe & Northern (So. Pac.)—Globe to Miami..	9.12
Southern Pacific Co.—Sahnarito southerly.....	10.26
	97.74

ARKANSAS.

De Queen & Eastern—Dierks to Beyond.....	13.00
Gould Southwestern—Cut-off, Evans to Champion.....	3.70
Little Rock, Maumelle & Western—Maud Junction to Maumelle.....	8.00
Memphis, Paris & Gulf—Nashville to Murphreesboro.....	15.00
	39.70

CALIFORNIA.

Bakersfield & Ventura—In Oxnard.....	5.00
Central California (So. Pac.)—Miles to Redwood City.....	5.54
Nevada & California (So. Pac.)—Magnolia to Halwee.....	38.27
Nevada-California-Oregon—Madeline to Alturas.....	40.00
Northwestern Pacific—Floodgate to Christine, 1.06 miles; Rio Campo to Monte Rio, 1.63 miles; total.....	2.69
Pacific Coast—Suey Junction to Garey.....	9.40
Sacramento Southern (So. Pac.)—Del Rio to Freeport.....	3.08
Sunset Western (So. Pac.)—Midland to Fellow.....	1.42
Western Pacific—Not specified.....	142.00
	247.40

COLORADO.

Beaver, Penrose & Northern—Beaver to Penrose.....	6.49
Denver, Laramie & Northwestern—Between Denver and Milliken.....	34.80
Union Pacific—Cut-off between Sand Creek and St. Vrain, 17.52 miles; north of Greeley to Hungerford, 13.16 miles; north of Greeley to Briggsdale, 26.16 miles; total.....	56.84
	98.13

DISTRICT OF COLUMBIA.

Washington & Western Maryland (B. & O.)—From Maryland state line to Aqueduct bridge and K street, Washington.....	3.81
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FLORIDA.

Apalachicola Northern—Apalachicola to St. Josephs.....	20.00
Atlantic Coast Line—Boone Valley branch—Tiger Bay to Fort Meade.....	3.50
Charlotte Harbor & Northern—Arcadia to Pierce.....	42.80
Live Oak, Perry & Gulf—Waylonza to Econfenia river.....	6.00
Madison Southern—Not specified.....	3.00
Marlanna & Blountstown—Marlanna to Alpha.....	15.00
Seaboard Air Line—Not specified.....	10.51
	100.81

GEORGIA.

Brinson Railway—Springfield to Newington.....	18.00
Georgia & Florida—Vidalia to Hazlehurst.....	28.40
Georgia, Florida & Alabama—Cuthbert to Kimbrough.....	19.00
Ocala Southern—Ocala south to Allapaha.....	15.90
Sparks Western—Sparks to Ellenton, 10 miles; Ellenton westward, 3 miles; total.....	13.00
Rome & Northern—Rome to Gore.....	20.00
Valdosta, Moultrie & Western—Not specified.....	32.00
	146.30

IDAHO.

Great Northern—Fidelity Lumber spur.....	1.99
Minidoka & Southwestern (Ore. Short Line)—Twin Falls to 10 miles south of Hollister.....	29.00
Oregon Railroad & Navigation Co.—Not specified.....	8.50
	39.49

ILLINOIS.

Chicago & North Western (Lee County Railway)—Between Nachusa and Nelson, 12.79 miles; Fulton cut-off, east end of Clinton bridge to about three miles east of Fulton, 4.95 miles; total.....	17.74
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INDIANA.

Ferdinand Railway—Huntingburg to Ferdinand.....	7.68
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KANSAS.

Garden City, Gulf & Northern—Garden City west to Scott City.....	40.00
Nebraska, Kansas & Southern—Garden City to end of track	15.00
Union Pacific—Onaga to Marysville.....	32.44
	87.44

KENTUCKY.

Caney, Piedmont & Morehead—Camel City to Piedmont.....	5.00
Chesapeake & Ohio—Cincinnati division—Maysville to Lawrence Creek.....	4.60
Kentucky Midland—Midland toward Madisonville.....	1.50
Louisville, Henderson & St. Louis—Mitchell southwest to Hartford.....	18.40
Madisonville, Hartford & Eastern (L. & N.)—Near Madisonville to Mitchell.....	55.54
Norfolk & Western—West Virginia state line to coal operations.....	1.98
Sparks Western—Sparks to Pineboro.....	14.00
Wasnota & Black Mountain—From Avila.....	7.00
	108.02

LOUISIANA.

Lake Charles Railway & Navigation Co.—Edna to Lake Charles.....	5.00
Louisiana & Arkansas—Minden west to Shreveport.....	30.00
Missouri & Louisiana—Carson to C. C. Junction.....	3.19
Morgan's Louisiana & Texas (So. Pac.)—Between Lafayette and Port Allen, 12.45 miles; between Bayou Sale and Southbend, 3.45 miles; total.....	15.90
New Iberia, St. Martins & Northern—Port Barre to New Iberia.....	48.00
	102.09

MAINE.

Bangor & Aroostook—Fort Kent to St. Francis, 17 miles; Van Buren to Grand Isle, 15 miles; Squa Pan to Stockholm, 48 miles; total.....	78.00
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MARYLAND.

Metropolitan Southern (B. & O.)—From Chevy Chase to the District of Columbia.....	4.68
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MICHIGAN.

Au Sable & North Western—Curran to Byers.....	3.00
Copper Range—Point Milk Junction to Senter.....	6.06
Detroit & Mackinac—Between Paxton and Hillman.....	13.60
Duluth, South Shore & Atlantic—Wellsburg north to Woods, 2.20 miles; Halway to Davis mine, 2.10 miles; Halway to Volunteer mine, 2.80 miles; total.....	7.10
East Jordan & Southern—Camp 34 to Camp 21.....	3.50
Keweenaw Central—Not specified.....	0.40
Manistee & Northeastern—Buckley eastward to Walton, 15 miles; not specified, 21.33 miles; total.....	36.83
Mineral Range—Mohawk to Gratiot mine, 2 miles; Osceola to Calumet and Hekla, 0.43 mile; Upper Mills to Ahmuk mine mill, 0.44 mile; total.....	2.87
	72.86

MINNESOTA.

Duluth & Iron Range—McKinley to Sparta, 5.8 miles; spurs to mines, 2.2 miles; total.....	8.00
Duluth & Northern Minnesota—Mile Post 50 to Mile Post 55.....	5.00
Duluth, Rainy Lake & Winnipeg—Around Silver mine to Virginia.....	4.30
Great Northern—Bray mine spur, 1.44 miles; Nashauk to Grand Rapids, 22 miles; total.....	23.44
Minneapolis, St. Paul & Sault Ste. Marie—Between Moose Lake and Duluth.....	42.20
St. Paul Bridge & Terminal—South Park to Hoffman avenue, St. Paul.....	2.33
	85.27

MISSISSIPPI.

New Orleans, Great Northern—Hopewell to Nogan, 21.90 miles; West Columbia to Columbia, 2.70 miles; total.....	24.60
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Sanoddy Valley—De Kalb to Sucarnochee.....	12.00	Virginia & Southwestern—Persia to Surgovinsville.....	16.46
	36.60		56.69
MISSOURI.			
Missouri Southern.—Reynolds to Ohlman, 3.25 miles; Ohlman to Bunker, 6.59 miles; total.....	9.84	TEXAS.	
Saline Valley (C. P. & Ste. G.)—Tlapek west to Coffman..	2.00	Abilene & Southern—Abilene south to Ballinger.....	54.00
	11.84	Angelina & Neches River—Keltys east to Angelina river....	20.00
MONTANA.			
Chicago, Milwaukee & Puget Sound—Missoula to Garrison..	70.00	Artesian Belt—Macdona to Christine.....	43.00
Montana Railroad—Between Leader and Lennep.....	6.00	Asherton & Gulf—Asherton Junction to Asherton.....	32.20
Montana Western—Conrad northwest to Valler.....	19.80	Bartlett-Florence—Bartlett to Maxston.....	12.00
Northern Pacific—From main line up Shields valley to Willisai	22.90	Concho, San Saba & Llano Valley—Miles southeast to Paint Rock	17.00
	118.70	Crystal City & Uvalde—Sansom to Crystal City.....	41.00
NEBRASKA.			
Chicago & Northwestern—Valentine cut-off—Between Thatcher and Valentine	5.73	Enid, Ochiltree & Western—Not specified.....	3.00
Union Pacific—Kelly to Northport.....	7.40	Estacado & Gulf—Not specified.....	8.00
	13.13	Gulf, Texas & Western—Jacksboro west to Megargel.....	53.00
NEVADA.			
Nevada Copper Belt—Wabuska to Mason.....	15.00	Houston, Fostoria & Northern—Fostoria to Midline, 5 miles; San Jacinto to end of track, 2 miles; total.....	7.00
Western Pacific—Not specified	288.00	Kansas City, Mexico & Orient—Sweetwater to San Angelo.	80.00
	303.00	Pecos & Northern Texas (A., T. & S. F.)—Plainview south to Lubbock	47.00
NEW HAMPSHIRE.			
Boston & Maine—In Concord.....	1.55	Quannah, Acme & Pacific—Between Acme and Paducah.....	37.50
NEW JERSEY.			
Central of New Jersey—Vineland branch—In Bridgeton....	3.66	Roscoe, Snyder & Pacific—Snyder north to Fluvanna.....	20.00
Erle Terminals (Erle)—Edgewater and Fort Lee branch—North extension, 0.95 mile; south extension, 24.60 miles; total	25.55	Stamford & Northwestern (Wichita Valley)—Stamford west to Spur	82.20
Penbom Creek (Erle)—Through Bergen hill, Jersey City....	4.74	Sugarland Railway—Burnside to House, 3 miles; Anchor to Ramsey Farm, 10 miles; total.....	13.00
	33.95	Texas & Gulf (A., T. & S. F.)—Center to Zuber.....	21.30
NEW MEXICO.			
Tucumcari & Memphis (C., R. I. & G.)—Tucumcari to Endee.	35.00	Texas Southeastern—Vair to Neff.....	7.35
NEW YORK.			
Genesee River (Erle)—Hunts to Cuba.....	33.25	Texas State—Between Rusk and Palestine.....	10.00
Long Island—Not specified.....	5.54	Timpson & Henderson—Ragley to Henderson.....	25.00
Norwood & St. Lawrence—Chase Mills to Waddington.....	6.00	Trinity Valley & Northern—Fouts north	3.00
Pittsburgh, Shawmut & Northern—State line to main line..	0.72	Tucumcari & Memphis (C., R. I. & G.)—Wildorado to 4.11 miles west of Adrian	29.88
	45.51		666.43
NORTH CAROLINA.			
Aberdeen & Rock Fish—Raeford to Waygram.....	12.00	UTAH.	
Bonlee & Western—Bonlee to Wells.....	6.00	Southern Utah—Price southwest to Hiawatha.....	18.00
Carolina, Clinchfield & Ohio—Between Marion and South Carolina state line.....	43.00	VERMONT.	
Durham & Charlotte—Gulf to Cummock.....	3.00	Barre Railroad—Barre to quarries.....	0.94
Laurinburg & Southern—Johns Station to Waygram.....	17.00	VIRGINIA.	
Norfolk & Southern—Bishop Cross to Pinetown.....	11.00	Carolina, Clinchfield & Ohio—Guest river to Tennessee state line	43.00
North & South Carolina—Gibson to South Carolina state line	1.00	Norfolk & Western—Catawba branch, Salem to mines of Copper, Silica & Glass Co., 9.39 miles; Town Hill branch, near Richlands to coal operations, 1.42 miles; Lynchburg Belt Line & Connecting Railway, connection with Southern Railway at Kinney, 0.64 mile; Big Stony Railway, Giles county to Monroe county, W. Va., 1.32 miles; Virginia & Potts Creek, terminus of the Interior & West Virginia to Paint Bank, 4.15 miles; Allisonia branch, near Allisonia, 0.60 mile; total.....	17.52
Randolph & Cumberland—Hallison to McConnell.....	3.50	Virginia & Southwestern—Moccasin Gap to Cameron.....	6.15
Southern—Not specified	2.92	Virginian—West from Rich creek, 0.41 mile; east from Stone mountain, 0.11 mile; total.....	0.52
Virginia & Carolina Southern—St. Pauls to Hope Mills.....	12.50		67.19
	111.92	WASHINGTON.	
OHIO.			
Coshocton, Otsego & Eastern—Not specified.....	3.40	Chicago, Milwaukee & Puget Sound—Not specified.....	28.00
Dayton, Lebanon & Cincinnati Railroad & Terminal Co.—East Oakwood to Dayton	3.00	Grays Harbor & Puget Sound—Not specified.....	10.00
Wheeling & Lake Erie—Between Orrville and Bolivar.....	12.01	Great Northern—Blaine to international boundary, 2.96 miles; Columbia river to Mansfield, 60.62 miles; total.....	63.58
	18.41	Idaho & Washington Northern—Newport north to Ione.....	51.00
OKLAHOMA.			
Clinton, Oklahoma & Western—Clinton to Butler.....	23.50	Oregon Railroad & Navigation Co.—Not specified.....	4.00
Missouri, Oklahoma & Gulf—Between Lamar and Durant...	70.00	Wenatchee Valley—Leavenworth north.....	6.00
Oklahoma Central—Spur into Ada.....	2.00		162.58
Oklahoma City Junction—Oklahoma City.....	1.00	WEST VIRGINIA.	
St. Louis & Oklahoma Southern—Frisco crossing to Tahlequah	2.00	Chesapeake & Ohio—Hinton division—Gauley, W. Va., to Kanawha Falls, 3.2 miles; Huntington division, St. Albans to Lewis, 0.9 miles; Coal River Railway, 12.1 miles; Raleigh & Southwestern, 8.6 miles; total.....	24.80
Wichita Falls & Northwestern—Frederick to Mangum.....	45.50	Coal & Coke—Branch from Gassaway east to Sutton.....	6.00
	144.00	Hampshire Southern—Romney southwest to Glebe.....	15.00
OREGON.			
California Northeastern (So. Pac.)—Calor to Klamath Falls.	16.40	Lorana—Hannahdale to Pullman.....	5.00
Corvallis & Alsea River—Barclay to Glenbrook.....	10.00	Norfolk & Western—Tug Fork branch, Pageton to No. 12 plant of United States Coal & Coke Co., 3.85 miles; Spice Creek branch, Roderfield to coal operations, 4.54 miles; Poplar Creek branch, near Sands to Kentucky state line, 0.09 mile; Interior & West Virginia, terminus of Big Stony Railway at Virginia state line to a connection with Virginia & Potts Creek, 17.53 miles; Superior branch extended, 0.08 mile; total.....	26.09
Des Chutes River—Not specified.....	2.00	Sewell Valley—Meadow creek to five miles beyond Springdale	16.00
Northwestern (Ore. Short Line)—Robinet to Homestead....	27.15	Valley River—Old Fort to Crouch Run.....	1.50
Oregon Railroad & Navigation Co.—Not specified.....	32.25	Virginian—Mullens to Pemberton, 23.75 miles; Patterson to Winding Gulf, 2.12 miles; total.....	25.87
Pacific & Eastern—Between Eagle Point and Butte Falls....	15.00		120.26
Pacific Railway & Navigation—Mile Post 22 to Timber, 8 miles; Bay City to Garibaldi, 4 miles; total.....	12.00	WISCONSIN.	
Salem, Falls City & Western—Dallas to Salem, 14 miles; spur lines, 2.50 miles; total.....	16.50	Cazenovia & Sauk City—Lavalie southwest to Cazenovia...	6.00
	134.30	Hazelhurst & Southeastern—Arbor Vitae to Woodruff, 2.70 miles; Hazelhurst Mills to Velasco, 8 miles; Velasco to Arbor Vitae, 2.20 miles; total.....	12.90
PENNSYLVANIA.			
Delaware, Lackawanna & Western—Lehigh to Hollisters....	4.00	Minneapolis, St. Paul & Sault Ste. Marie—Near Superior...	7.00
East Broad Top Railroad & Coal Co.—Shade Gap to Neeleyton	4.00	Wisconsin & Northern—Neonit northwest.....	5.28
Lake Shore & Michigan Southern—Franklin to Rose Siding, 56.50 miles; Polk Junction to Belmar, 10.80 miles; total	67.30		31.18
Monongahela—Rush Run Junction to Sarah, 4.20 miles; Republic to Ralph, 2.40 miles; total.....	6.60	WYOMING.	
Morrisdale (Logging Road)—Morrisdale to Alden.....	4.50	Laramie, Hahns Peak & Pacific—Albany south to Foxpark..	15.00
Pennsylvania—Milbell to Osborne mines, 2.01 miles; Milbell to Terminus, 1.37 miles; total.....	3.38	PANAMA.	
Pittsburgh, Shawmut & Northern—Coryville to state line....	10.49	Panama Railroad (Relocated line)—Between Gatun and Gamboa, 7.50 miles; between Paraiso and Corozal, 2 miles; total	9.50
Western Alleghany—West of East Newcastle.....	4.00		
	104.27	CANADA.	
SOUTH CAROLINA.			
Bennettsville & Cheraw—Drake to Brownsville.....	7.00	Alberta Railway & Irrigation Co.—In province of Alberta.	8.00
Carolina, Clinchfield & Ohio—North Carolina state line south to Spartanburg	18.00	Atlantic, Quebec & Western—Port Daniel, Que., to Newport, 10 miles; Newport to Grand River, 20 miles; Gaspe to Douglastown, 6 miles; total.....	36.00
North & South Carolina—North Carolina state line to Dillen.	29.00	Canadian Northern—In Manitoba, Saskatchewan and Alberta—Not specified	287.00
	54.00		
TENNESSEE.			
Carolina, Clinchfield & Ohio—Between Virginia state line and Johnson City	12.78		
Knoxville, Sevierville & Eastern—Vestal to Sevierville.....	27.50		

REVIEW OF 1909 ANNUAL REPORTS.

BY RAY MORRIS,

Managing Editor of the *Railroad Age Gazette*.

As in previous years, an attempt has been made to show the prevailing tendencies of the railway year by means of graphic analyses, derived from a group of roads large enough to be representative of conditions in all parts of the country. The larger curves in the progress of railway development thus illustrate themselves quite clearly. The mechanical construction of the diagrams must be kept in mind, however, if the results are to have significance. In each case the percentages of increase are calculated from some particular year arbitrarily selected as the base. For example, in Fig. 1, this year is 1899. Gross earnings, operating expenses and net earnings were by no means equal in that year; but, since the increases in each year represent the percentage of gain from the gross earnings or the operating expenses or the net earnings as they actually were in 1899, these three lines start from a common point. The purpose of the diagrams, therefore, is to show proportionate results rather than absolute results; we are, for the present, considering the changing relations of gross earnings, operating expenses and net earnings, rather than the actual amount of either.

Figure 1 shows that, from 1899 to 1902, the rate of progress in these three main divisions of the income account was substantially the same; 1903, however, was a particularly good year, and 1904 was a bad year, and the fluctuation of the curve of net earnings between these two years was considerable. This is shown much more graphically in the results between 1907 and 1909. In the year ended June 30, 1907, it will be seen that in spite of the startling increase in gross earnings, operating expenses had gotten quite out of hand,

Canadian Northern Ontario—Hawkesbury, Ont., west to Rockland, 35.70 miles; not specified, 2.3 miles; total.	38.00
Canadian Northern Quebec—Quebec to Montmorency, 7 miles; Lachvootino to St. Marc, 2 miles; St. Jacques to Rawdon, 10 miles; total.	19.00
Canadian Pacific—In Quebec—Mile 31.6 from Nominating to Duhamel, 3.14 miles; Manitoba—Moberly to Windy Gates, 6.8 miles; Tuelon north 28 miles; Virden north 13.6 miles; Saskatchewan—Weyburn to Forward, 25.2 miles; Wilkie to Hardisty, 64.5 miles; Wynyard to Lanigan, 37.1 miles; Asquith to Asquith ballast pit, 7 miles; Alberta—Langdon to Acme, 39 miles; Klipp to Carmangay, 28.2 miles; Stettler to Castor, 35.4 miles; Wilkie to Hardisty, 66.8 miles; Lethbridge to McLeod, 31.7 miles; British Columbia—Hector to Fields, 8.2 miles; total.	394.64
Grand Trunk Pacific—Saskatchewan—Melville to Balcarres, 34 miles; Melville to Yorkton, 25 miles; Alberta—Irma to Clover Bar, 102 miles; Edmonton to Wolf Creek, 124 miles; Tofteld to Camrose, 26 miles; total.	311.00
National Transcontinental Railway (Grand Trunk Pacific)—New Brunswick—Moncton west Mile 20 to Mile 30, 10 miles; Mile 53 to Mile 56, 3 miles; Chipman west Mile 5 to Mile 10, 5 miles; from Intercolonial Railway crossing, 96 miles from Moncton, east to Mile 13, 13 miles, west to Mile 14, 14 miles; Quebec—New Brunswick boundary east 27 miles; Mile 61 east to Mile 64, 3 miles; Quebec—Quebec bridge between Mile 26 and Mile 36, east 16 miles; between Mile 0 and Mile 50, west 10 miles; between Mile 50 and Mile 150, west 15 miles; from Mile 150 to Mile 158, west 8 miles; Ontario—From the junction of the Temiskaming & Northern Ontario at Cochrane, east 9 miles, west 35 miles; from the Ontario-Manitoba boundary, east from Mile 8 to Mile 152, 144 miles; total.	312.00
Niagara, St. Catharines & Toronto—Welland, Ont., to Port Colborne.	9.00
Quebec Central—St. George, Dorchester, Que., to St. Justine.	30.00
Vancouver, Victoria & Eastern (Gt. Nor.)—Keremeos, B. C., to Princeton, 42 miles; between international boundary and Sumas, 1.05 miles; total.	43.05
	1,487.69
MEXICO.	
Inter California (So. Pac.)—Tecalote to Dieguinos.	13.57
Southern Pacific of Mexico—Tufanito, Sonora to Tonichi, 38.19 miles; between Cullacan, Sinaloa, and Mazatlan, 35 miles; south of Mazatlan in states of Sinaloa and Tepic, 122 miles; north of Orendain Junction, Jalisco, 21.50 miles; total.	216.69
Tuxpam & Furbero—Cobas (Tuxpam) to Furbero.	51.00
	281.26

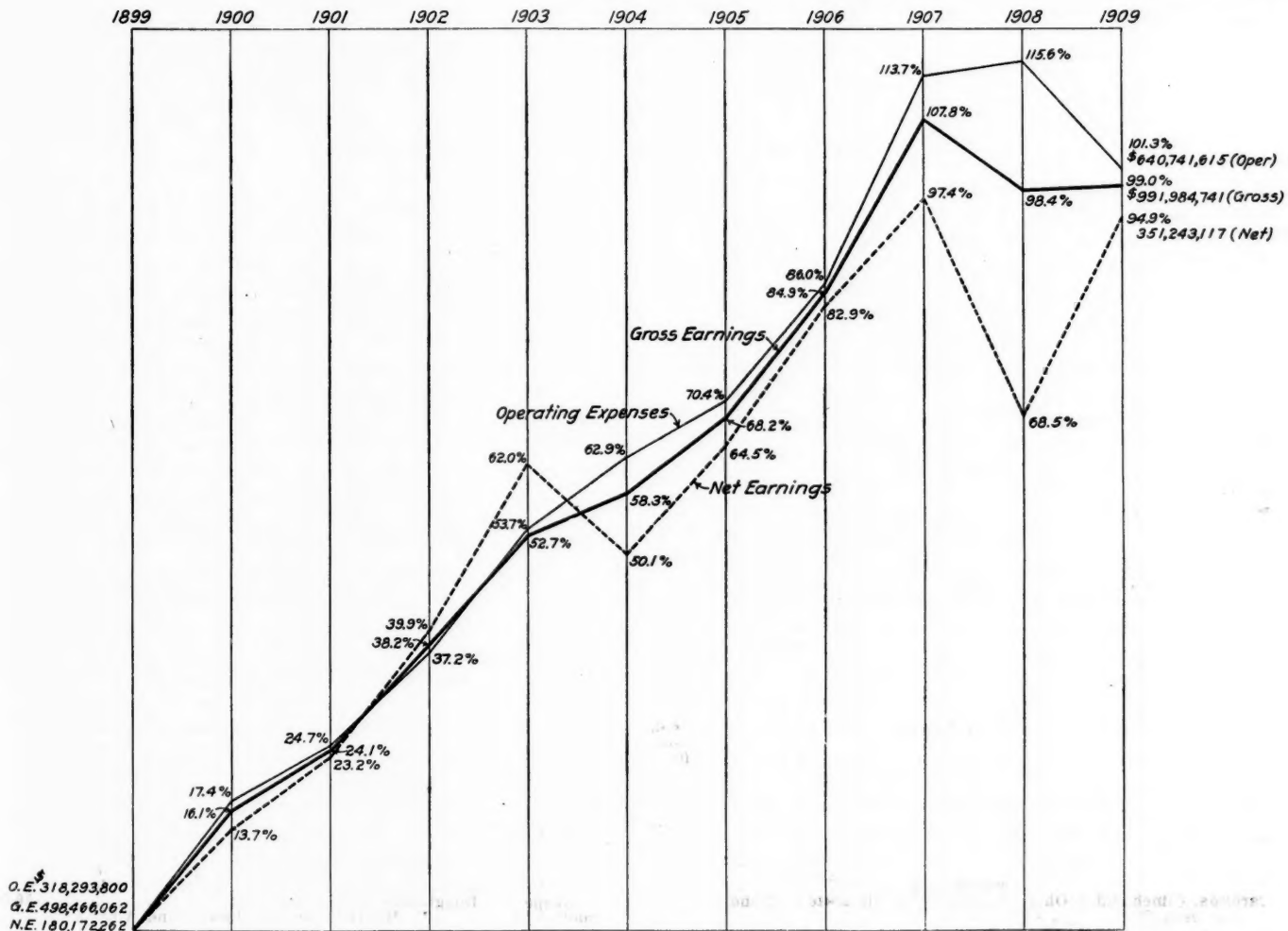


Fig. 1—Relative Increases in the Income Account, from 1899 to 1909. Seventeen Roads.

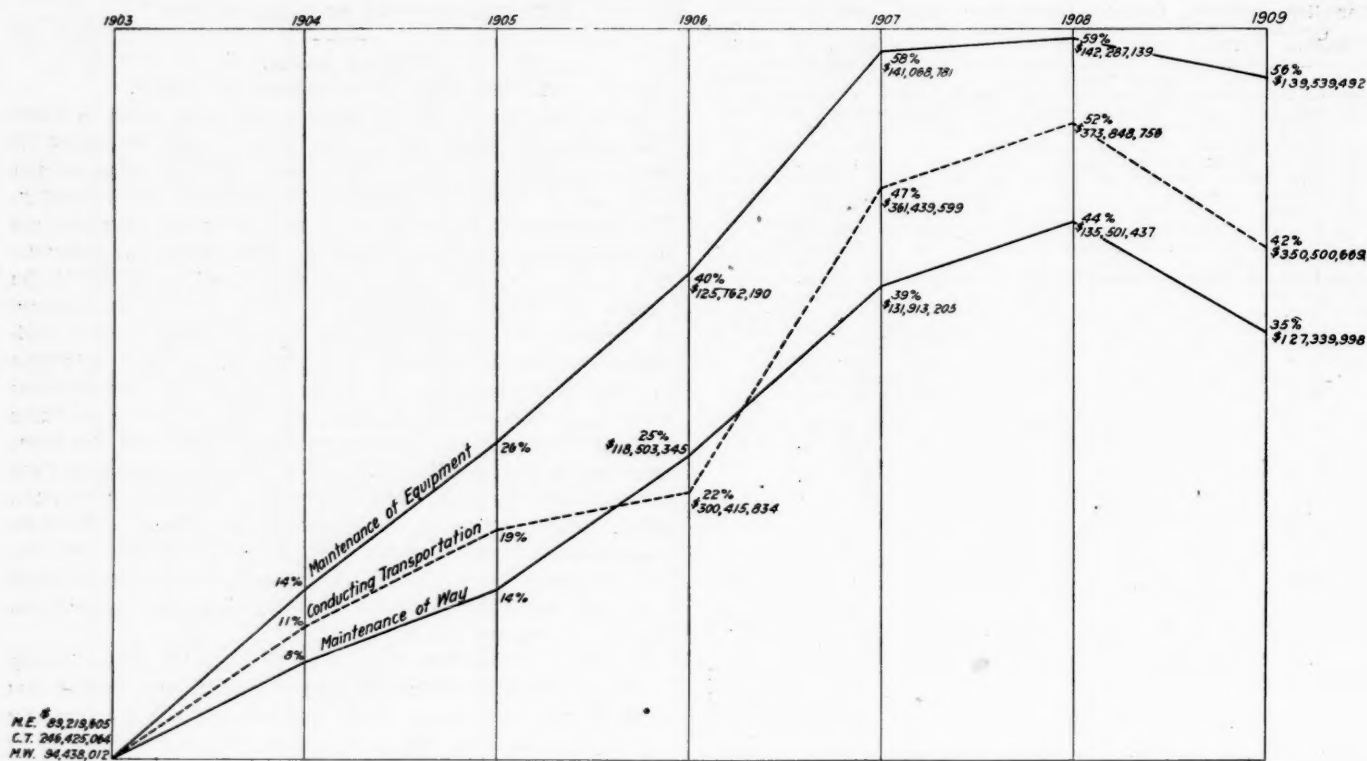


Fig. 2—Relative Increases in the Expense Account. Nineteen Roads.

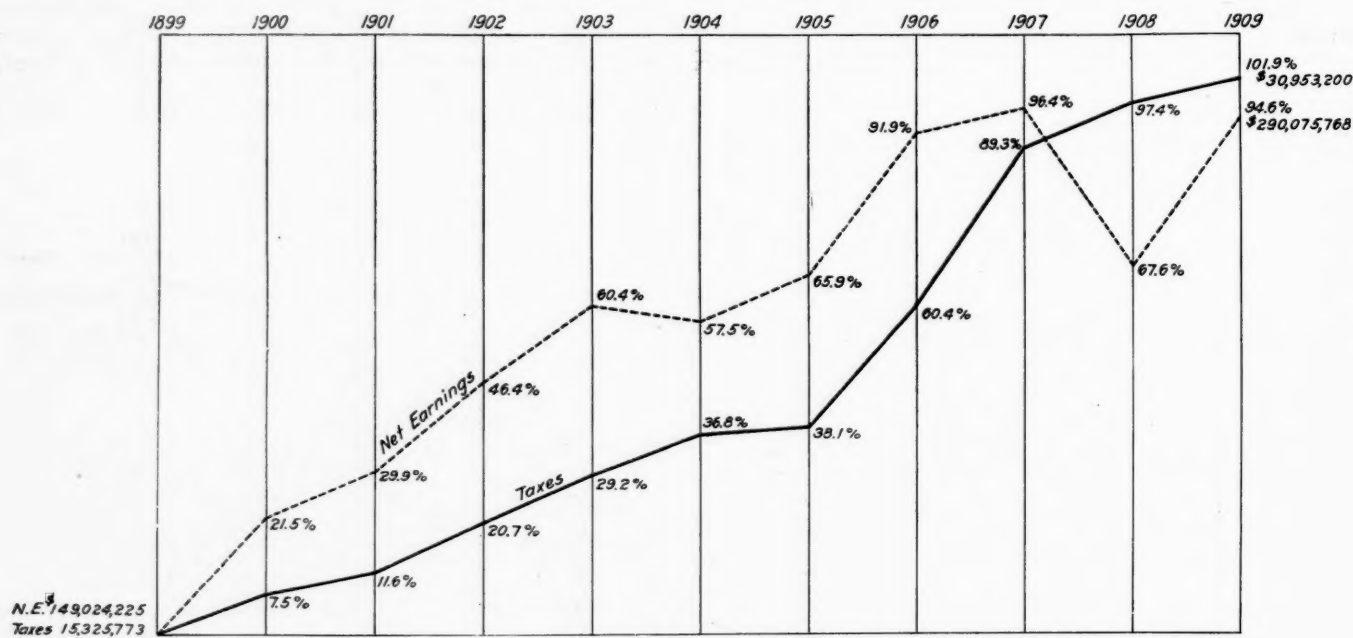


Fig. 3—Relative Increases of Net Earnings and Taxes. Fifteen Roads.

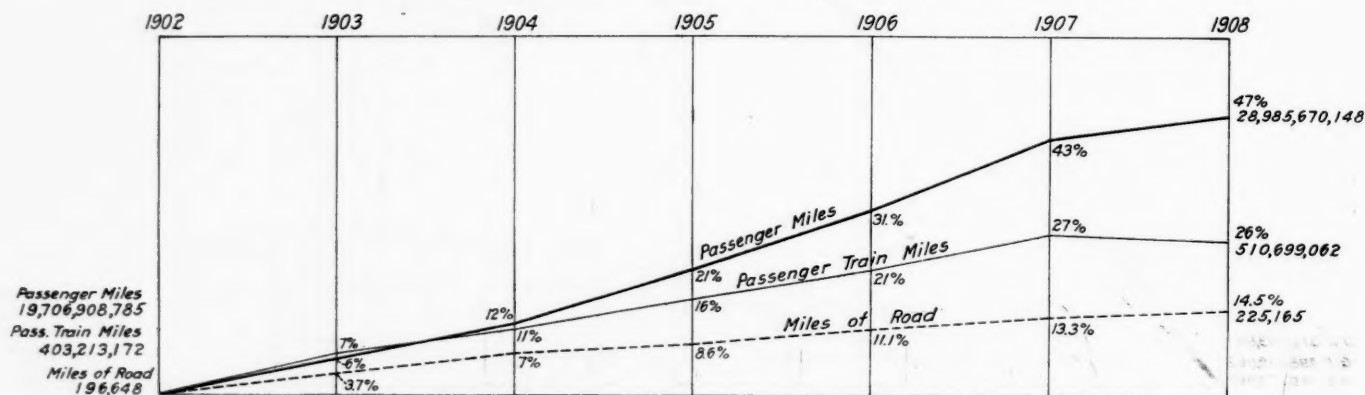


Fig. 4—Relative Increases in Fasseger Traffic Since 1902.

with the result that in the best gross year in the history of American railways, net earnings were not showing their proportionate increase, while operating expenses were showing a good deal more than their proportionate increase. In 1908 gross fell sharply, while control of operating expenses had begun to be exercised but was not yet effective, so that net earnings went back to the level of three years before. In 1909, however, the results were just the opposite. Gross earnings show an insignificant increase over 1908, but operating expenses were entirely under control; the roads were being operated with conspicuous efficiency, and net earnings rebounded rapidly.

The roads comprising Figure 1 are as follows:

Atchison, Topeka & Santa Fe.	Louisville & Nashville.
Baltimore & Ohio.	New York, New Haven & Hartford.
Chesapeake & Ohio.	Norfolk & Western.
Chicago & North Western.	Northern Pacific.
Chicago, Burlington & Quincy.	Philadelphia & Reading.
Chicago, Milwaukee & St. Paul.	Southern.
Erie.	Southern Pacific.
Great Northern.	Wabash.
Illinois Central.	

Figure 2 is a study of the expense account, and shows the relative increases in the three main divisions of it, between 1903 and 1909. It will be observed that the most rapid increase proportionately has been in maintenance of equipment, and that this account was the least susceptible of economies in the hard-times period. It is rather noteworthy that the economies in the department of maintenance of way and

Illinois Central.
Missouri, Kansas & Texas.
New York Central.*
New York, New Haven & Hartford.

Norfolk & Western.
Southern Pacific
Wabash.

*Year ending December 31, 1908.

Figure 3 shows in a very graphic manner one effect of the fixing of the attention of all the forces of government upon railways, beginning about 1905. From 1899 to 1905 the increase in net earnings was greater in proportion than the increase in taxes; in 1905 and 1906, however, the tax curve went upward with abnormal rapidity, and between the 1907 year and the 1908 year it crossed the curve of net earnings. The tax curve at no time bent downward during the progress of the bad times. Although its rate of increase was somewhat lessened, net earnings went far below it in proportionate increase in 1908, but are now increasing more rapidly than taxes are; and there is fair prospect that the curves will cross again this year.

Figure 3 is based on results from the following roads:

Atchison, Topeka & Santa Fe.	Illinois Central.
Baltimore & Ohio.	Louisville & Nashville.
Chesapeake & Ohio.	New York, New Haven & Hartford.
Chicago & North Western.	Norfolk & Western.
Chicago, Burlington & Quincy.	Northern Pacific.
Chicago, Milwaukee & St. Paul.	Southern.
Erie.	Southern Pacific.
Great Northern.	Wabash.

Figures 4 and 5 show the changing relations of miles of road, passenger-train miles, freight-train miles, and ton miles on a group comprising substantially all the railway mileage in

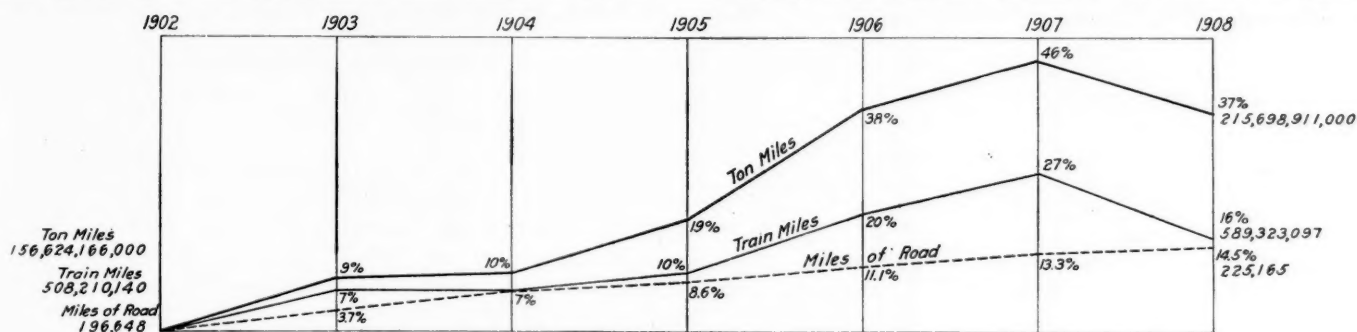


Fig. 5—Relative Increases in Freight Traffic Since 1902.

structures are not at all excessive; this in view of the fact that many persons have been under the impression that the roads cut their maintenance accounts to the lowest possible figure in 1908. Of course, every effort was made to eliminate all unnecessary expenditure during the year following October, 1907; the reason why the 1908 maintenance of way account actually shows higher than 1907 is, that the effects of the panic were not really felt severely until the winter of 1907-1908, and the maintenance expenditure during the first half of the year was abnormally high, just as the expenditure during the last half was abnormally low. The result was an average instead of a figure showing the real trend of affairs. During the 1909 year, however, the economies, although not extreme, were still being carried out; consequently the curve slanted down. It will be seen that the most noteworthy economies were made not in the maintenance departments but in the transportation department.

In 1905 and 1906 there was no economy in the department of conducting transportation, but the maintenance departments went ahead tremendously because of the prosperous times and the efforts of railway managers to plow some of these good earnings back into the property; but in 1907 the labor situation became so bad and the congestion of traffic became so great that transportation costs took a spectacular bound upward. All three of these departments are now well in hand and are behaving in a normal and wholesome manner.

Figure 2 is based on the following roads:

Atchison, Topeka & Santa Fe.	Chicago, Burlington & Quincy.
Baltimore & Ohio.	Chicago, Milwaukee & St. Paul.
Buffalo, Rochester & Pittsburgh.	Chicago, Rock Island & Pacific.
Chesapeake & Ohio.	Cleveland, Cin., Chicago & St. L.
Chicago & Alton.	Denver & Rio Grande.
Chicago & North Western.	Great Northern.

the United States. The figures upon which these curves are based are taken from the results reported in *Poor's Manual of Railroads*; consequently, they do not include the 1909 year. These figures show graphically one important and interesting tendency—the comparative stability of passenger earnings in hard times. It will be observed that the increase in ton miles and passenger miles is much greater than the increase in train miles, while the increase in train miles is greater than the increase in miles of road, proportionately. The increasing curve of passenger miles through good times and bad is much more uniform than the curve of ton miles; while the effort to make special economies in the transportation department in 1904 and 1908 is clearly shown by the fact that the increase in the miles of public service is greater than the increase in the train miles.

Figure 6 is a diagram made up of the composite results of the Northern Pacific and the Union Pacific, to show single-track miles, number of freight cars, capacity of freight cars, passenger miles and ton miles in their relation to each other since 1902. Single-track miles are obtained arbitrarily, according to the *Railroad Age Gazette* formula, by taking all the miles of first, second, third, etc., track and half the mileage of switches and sidings. This formula has long been used in our annual report reviews because of the well-known fact that the cost of maintaining two miles of siding is just about equivalent to the cost of maintaining one mile of main running line. This figure shows with especial clearness the important increases in passenger miles in the Far West. The passenger-miles of the railways of the country as a whole increased about 4 per cent. between 1907 and 1908; the passenger miles of the Union Pacific and Northern Pacific in-

creased 19 per cent. in the same period, while the falling off in ton mileage between 1907 and 1908 was, in the case of the Northern Pacific and Union Pacific, precisely equivalent to the falling off in the ton mileage of the American railway system as a whole. It is a significant commentary on the growth of transcontinental traffic that, during the last seven years, while the single-track mileage of these two roads has increased 20 per cent.—this increase consisting largely of passing tracks and sidings—the number of freight cars on the two roads has increased 31 per cent., and the capacity of the freight cars has increased 69 per cent. The strain of the 1906 car shortage is partly illustrated by the demonstration that ton mileage had increased in that year 55 per cent. over the ton mileage of 1902, while the capacity of freight cars had increased only 33 per cent. during the same period. Then large equipment orders were placed, and the number and capacity of cars alike increased very rapidly during the next year.

The following table of comparative train loads is of considerable interest. Owing to differences in statistical methods, the comparisons are not exact, but represent a reasonably close approximation. The train loads are computed by divid-

and 1908; in spite of the desire to work economically in a bad year, trains were running light. On the other hand, in 1905 and 1909 the gains were abnormal; conditions, both as regards traffic and as regards capacity of equipment in service, were exceptionally favorable.

CHANGES OF RAILWAY OWNERSHIP AND CONTROL IN 1909.

The number of changes of railway ownership and control during 1909 has been unusually large. In the following list changes in electric lines are included only when the electric line has been controlled or acquired by a steam road:

Alaska Central.—After sale of this road at foreclosure control of it was turned over to a successor company, the Alaska Northern. (See an editorial on "Receiverships and Foreclosures" elsewhere in this issue.)

Alaska Northern.—See Alaska Central.

Ann Arbor.—See Manistique & Lake Superior.

Baltimore & Ohio.—See Chicago Terminal Transfer; also Cincinnati, Hamilton & Dayton.

Beaumont & Great Northern.—A syndicate headed by B. F.

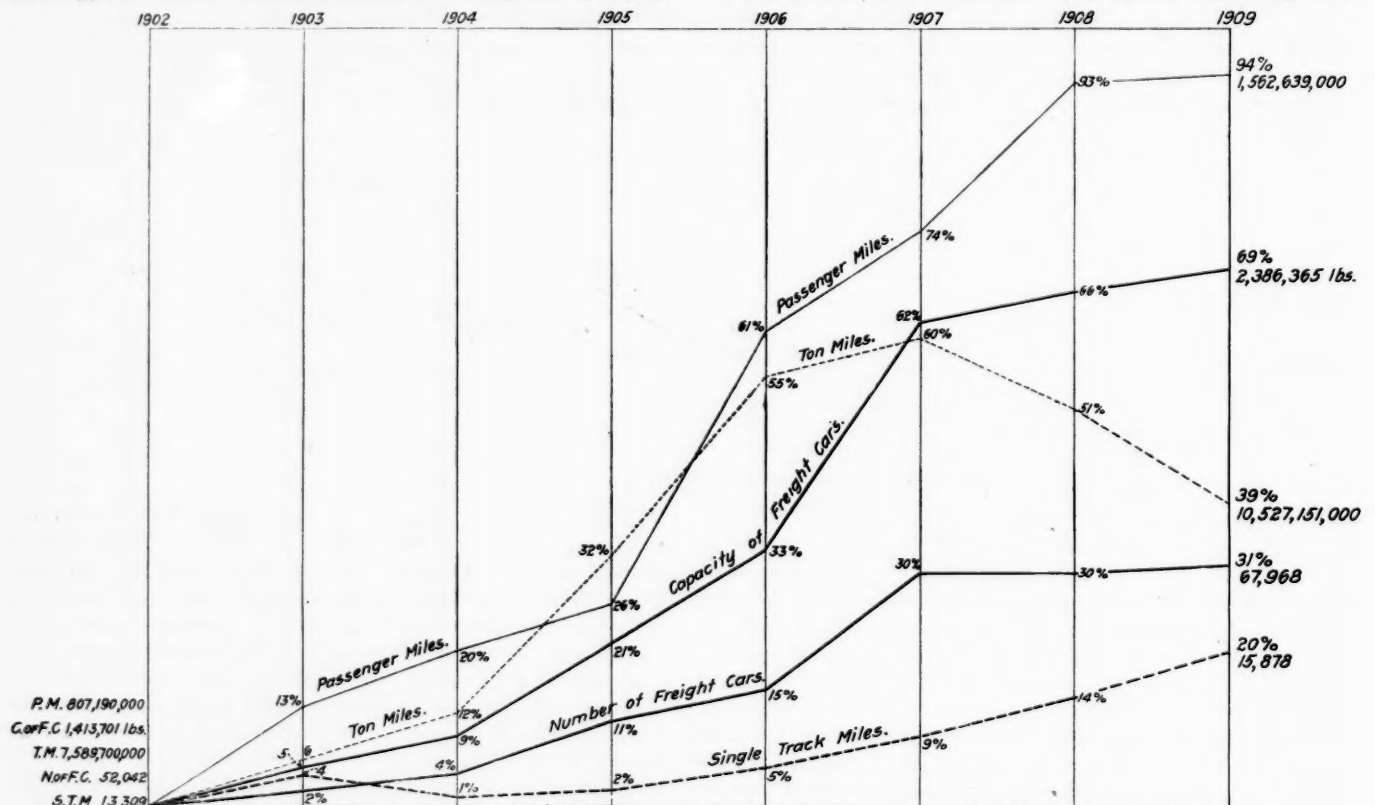


Fig. 6—Composite Diagram; Northern Pacific and Union Pacific.

ing revenue ton miles by revenue freight train miles plus all mixed train miles, as per the Interstate Commerce Commission's formula.

The roads in the table were not selected to represent high or low records, but a grouping of average conditions in different parts of the country. The record average train load (not officially published) has for years been held the Bessemer & Lake Erie, with a revenue loading above 1,000 tons. The Pittsburgh & Lake Erie, the Hocking Valley and the Virginian also have tremendous loadings of their specialties.

	1909	1908	1907	1906	1905	1904	1903	1902	1901
Baltimore & Ohio...	425	408	433	420	399	401	416	406	381
Buff., Roch. & Pitts..	597	530	542	525	507	439	441	424	406
Chesa. & Ohio.....	675	621	596	586	557	508	493	508	511
Illinois Central....	355	352	364	353	319	278	288	275	235
Lehigh Valley.....	535	530	526	504	501	486	485	467	467
M. St. P. & S. S. M.	354	329	334	329	309	301	305	315	314
Northern Pacific...	431	431	407	400	367	339	344	346	324
St. L. & San. Fran..	220	212	224	214	200	198	195	187	200
St. L. Southwestern.	268	311	323	315	296	285	282	256	236
Wabash.....	352	361	360	348	293	280	302	285	283

Average, 10 roads. 421.2 408.5 410.9 399.4 374.8 351.5 355.1 346.9 335.7
It is interesting to see the drop in the averages in 1904

Yoakum acquired a controlling interest in this company. It operates 34 miles from Trinity, Tex., to Livingston.

Boston & Maine.—This road has passed into the control of the Boston Holding Company. In June, 1908, the New York, New Haven & Hartford sold all its stock in the Boston & Maine, amounting to \$10,994,900, to John L. Billard, of Meriden, Conn. President Mellen, in a statement to the Massachusetts legislature on February 16, 1909, said that the sale to Mr. Billard was bona fide, and that the New Haven no longer had any interest, direct or indirect, in the stock. Mr. Billard and his associates subsequently organized the "Boston Railroad Holding Company," which in October, 1909, took over the B. & M. stock, giving for it \$140 a share, payable \$125 in Boston Holding Company bonds and \$15 in its stock, calling for a total of \$1,649,200 of its stock and \$13,743,500 of its 5 per cent. bonds. Among those associated with Mr. Billard in the Boston Holding Company are Theodore N. Vail, president of the American Telephone & Telegraph Company, and Philip Dexter, president of the Boston & Providence Railroad. The law creating the Holding Co. provides that a railway company may acquire

a controlling interest in its stock and guarantee its bonds. The law was drafted so as to permit the N. Y., N. H. & H. to control, under supervision of the state of Massachusetts, the B. & M. through control of the Boston Railroad Holding Co. President Mellen, of the New Haven, has been elected a director of the B. & M. and the Maine road is now controlled by the New Haven.

Boston Railroad Holding Co.—See Boston & Maine.

Canadian Northern.—See Duluth, Rainy Lake & Winnipeg.

Central of Georgia.—Formal transfer was made to the Illinois Central of the \$5,000,000 stock of this road, which was bought by E. H. Harriman from Oakley Thorne and others in 1908. The sale carried with it control of the road and of three steamship lines from Savannah, one to New York, one to Boston and one to Philadelphia.

Chesapeake & Ohio.—Edwin Hawley and his associates in January bought the \$15,630,000 of stock of this road transferred to Kuhn, Loeb & Co. by the Pennsylvania Railroad in December, 1906, and thus secured control. Mileage, 1,841 miles; stock, \$62,799,100; funded debt, \$99,768,000.

Chicago & Eastern Illinois.—See Chicago, Rock Island & Pacific.

Chicago, Burlington & Quincy.—See Colorado & Southern.

Chicago, Cincinnati & Louisville.—It is understood that this road, which is in the hands of a receiver, is passing into the control of Edwin Hawley and his associates, although it seems that the deal is not consummated. It is understood that the Hawley group of financiers desire it as a connecting link between the Chesapeake & Ohio and their roads farther west.

Chicago Great Western.—On sale at foreclosure this road passed into the control of a syndicate headed by J. P. Morgan. (See editorial on "Receiverships and Foreclosures" elsewhere in this issue.)

Chicago, Memphis & Gulf.—See Dyersburg Northern.

Chicago, Milwaukee & Gary.—Control of this road, an outer belt line around the Chicago district, was transferred from a syndicate headed by H. W. Seaman to the St. Louis Union Trust Company interests, who had arranged to finance needed improvements and extensions.

Chicago, Milwaukee & Puget Sound.—See Union Pacific.

Chicago, Rock Island & Pacific.—The Chicago, Rock Island & Pacific Railroad Company of Iowa on December 1 sold and delivered to B. F. Yoakum, Edwin Hawley and their associates the \$28,940,000 out of a total of \$29,000,000 of the common stock of the St. Louis & San Francisco which was owned by the Chicago, Rock Island & Pacific. With this sale the Rock Island-Frisco combination was completely dissolved, the Rock Island Lines remaining in the control of W. H. Moore, D. G. Reid and their associates, and the Frisco and its controlled lines, including the Chicago & Eastern Illinois and the Evansville & Terre Haute, passing to the control of Messrs. Yoakum and Hawley and their associates. (See Lehigh Valley.)

Chicago Terminal Transfer.—It is understood that the Baltimore & Ohio, by purchase of the \$16,000,000 stock of this company formerly owned by the Burlington, has acquired control. The property is advertised to be sold at foreclosure on January 6, when it is expected to pass under the complete control of the Baltimore & Ohio.

Chihuahua & Pacific.—See Mexico Northwestern.

Cincinnati, Hamilton & Dayton.—A plan was adopted for the readjustment of the finances of this company, which involved the practical passing of control to the Baltimore & Ohio, although nominally the passing of control is deferred. An agreement was made by J. P. Morgan and the B. & O. whereby the controlling interest in the stock of the C., H. & D. is to be acquired by the B. & O. on July 1, 1916, and meantime the controlling stock is vested in three trustees, one of whom is the president of the B. & O.

Colorado & Northwestern.—This road was sold at foreclosure on March 29 to representatives of the bondholders' committee, and by them was transferred to the Denver, Boulder & Western Company, which was organized to take over the property. (See editorial on "Receiverships and Foreclosures" elsewhere

in this issue.) The new company made a mortgage securing \$8,000,000 bonds, of which \$7,000,000 were issued to pay for the property, and the remainder will be issued after January 1, 1910, to pay for betterments and extensions and to buy more rolling stock.

Colorado & Southern.—The transfer of control of this road from the Hawley interests to the Chicago, Burlington & Quincy, which was in process at the close of 1908, was consummated in the early part of 1909 by the election of directors and officers representing the Burlington.

Denver, Boulder & Western.—See Colorado & Northwestern.

Duluth, Rainy Lake & Winnipeg.—The Canadian Northern acquired all the capital stock.

Dyersburg Northern.—Control of this road was bought by John H. Watkins, S. G. Latta and Ernest Rice for \$316,000, and its name was changed to the Chicago, Memphis & Gulf. It runs from Dyersburg, Ky., to Tiptonville, 31 miles. It had outstanding \$300,000 stock and \$250,000 bonds.

Elizabeth River.—Control was bought by the Norfolk & Portsmouth Belt, which is itself controlled by the Pennsylvania Railroad. The Elizabeth River runs from lumber yards in Norfolk, Va., about 10 miles to the deepwater front of the southern branch of the Elizabeth river.

Evansville & Terre Haute.—See Chicago, Rock Island & Pacific.

Fall Brook.—See New York Central & Hudson River.

Frankfort & Cincinnati.—See Louisville & Nashville.

Geneva, Corning & Southern.—See New York Central & Hudson River.

Grand Trunk.—See Pontiac, Oxford & Northern.

Great Northern.—This road acquired control of the Spokane & Inland Empire (electric), operating 247 miles of track and doing both freight and passenger business. The Spokane & Inland Empire has outstanding \$10,000,000 common and \$6,311,500 preferred, and owns the capital stock of the Coeur d'Alene & Spokane, the Spokane Terminal, the Spokane Traction Company and the Spokane & Inland Railway, all of which are operated as divisions of it. The road will be operated by the Great Northern as a feeder.

Hidalgo & Northeastern.—See National Railways of Mexico.

Hocking Valley.—The common control of this road, the Toledo & Ohio Central, the Zanesville & Western and the Kanawha & Michigan was dissolved in accordance with a decree of an Ohio court holding that it violated the state anti-trust law, and a reorganization was effected by which the Hocking Valley and the Kanawha & Michigan are under one control and the Toledo & Ohio Central and the Zanesville & Western are under another control.

Illinois Central.—See Central of Georgia.

Intermountain Railway.—This road was bought by Chicago parties. It runs from Denver, Colo., to Golden.

Kanawha & Michigan.—See Hocking Valley.

Kansas City, Southern & Gulf.—This road was sold to Chicago capitalists, including P. E. Stanley and John A. Fletcher. It is 10 miles long and is being extended from Westmoreland, Kan., to Manhattan.

Lehigh Valley.—It has been both reported and denied that control of this road has been acquired by the interests that control the Chicago, Rock Island & Pacific. At the annual meeting on January 18 the stockholders will be asked to elect William H. Moore, Daniel G. Reid and Edward S. Moore to the board, and it is understood that W. H. Moore and Mr. Reid will be elected to the executive and financial committees.

Louisville & Atlantic.—See Louisville & Nashville.

Louisville & Nashville.—This road acquired all of the \$1,000,000 stock and bonds and \$550,000 short-time notes of the Louisville & Atlantic, running from Versailles, Ky., to Beattyville Junction, 101 miles.

The Louisville & Nashville also acquired control of the Frankfort & Cincinnati; mileage, 33.

Manistique & Lake Superior.—This company, incorporated in Michigan with a capital stock of \$250,000 and an authorized issue of \$1,300,000 25-year non-cumulative income bonds, of

which \$1,100,000 were outstanding, bought the property of the Manistique & Northern, running from Manistique, Mich., to Shingleton. The Manistique & Northern was a reorganization of the Manistique, Marquette & Northern, whose stock was controlled by the Grand Rapids & Indiana. The Manistique & Lake Superior is controlled by the same interests as the Ann Arbor.

Manistique & Northern.—See Manistique & Lake Superior.

Mexican Southern.—See National Railways of Mexico.

Mexico Northwestern.—This company acquired control of the Chihuahua & Pacific, 175 miles; the Sierra Madre & Pacific, 32 miles, and the Rio Grande, Sierra Madre & Pacific, 160 miles. The last-named runs from El Paso, Tex., to Casas Grande, Mex.

Minneapolis, St. Paul & Sault Ste. Marie.—This road, which is itself controlled by the Canadian Pacific, acquired control of the Wisconsin Central, which had a mileage of 1,023 miles, capital stock of \$30,000,000 and funded debt of \$34,450,105; and the identity of the Wisconsin Central was completely merged in that of the "Soo." The "Soo" having acquired a substantial share of the common stock of the Wisconsin Central, gave to holders of the preferred stock in exchange for their stock its "leased line stock certificates" on which it guaranteed to pay 4 per cent. per annum, payable semi-annually for 99 years, the preferred stockholders to forego their right to a share of the profits when they shall exceed 4 per cent. on the common stock. The deal was consummated on this basis.

Missouri, Kansas & Texas.—A large interest in this road was bought by Edwin Hawley and B. F. Yoakum, which, in connection with the interest of Speyer & Co., carries control. The amount of stock acquired was not stated. It was stated that the stock obtained was bought in the open market and from Dutch and English holders.

Missouri River & Northwestern.—See Rapid City, Black Hills & Western.

National Railways of Mexico.—Control of the Hidalgo & Northeastern, operating 152 miles, was secured.

The Mexican Southern (277 miles) was leased to the Inter-oceanic, which is controlled by the National Railways of Mexico. The Inter-oceanic guarantees 4 per cent. dividends on the \$3,425,225 of Mexican Southern preferred stock and also guarantees dividends on the \$5,000,000 of common.

New York Central & Hudson River.—This road bought the Spuyten Duyvil & Port Morris, running from Spuyten Duyvil, N. Y., to Port Morris, six miles. It had been leased since 1871 by the New York Central, which guaranteed 8 per cent. on its stock.

The New York State Railways Company was incorporated in New York to take over the New York Central's controlled electric lines, including the Rochester Railway, the Rochester & Sodus Bay and the Rochester & Eastern Rapid Ry. The New York State Railways Company has an authorized capital stock of \$23,140,200, consisting of \$3,862,500 five per cent. first preferred, \$4,500,000 second preferred and \$14,777,700 common.

The Geneva, Corning & Southern was formed in February, 1909, by the consolidation of the Syracuse, Geneva & Corning, the Fall Brook Railway and the Pine Creek Railways. The new company—as were the merged companies—is controlled by the New York Central. Its authorized stock consists of \$2,325,000 common and \$5,000,000 preferred (4 per cent. cumulative) and its bonded debt cannot exceed \$10,000,000. The New York Central guarantees the interest on the preferred and 3½ per cent. on the common.

New York, New Haven & Hartford.—This road acquired control of the Tarrytown, White Plains & Mamaroneck, an electric line, which had been in a receiver's hands. It is operated from Tarrytown Station, N. Y., on the New York Central, to Mamaroneck, on Long Island Sound, and from White Plains Station to Silver Lake Park, a total of 23 miles. See also Boston & Maine.

New York State Railways.—See N. Y. C. & H. R.

Norfolk & Portsmouth Belt.—See Elizabeth River.

Norfolk & Western.—The Pennsylvania Railroad and its subsidiaries repurchased from Kuhn, Loeb & Co. the block of Norfolk & Western stock, having a face value of between \$15,000,000 and \$20,000,000, which in September, 1906, was sold by the Pennsylvania management.

Oregon Trunk Line.—Control of this projected line in central Oregon was acquired by the Hill interests, and construction work on it is now being actively pushed.

Pan-American.—Control of this road was acquired for \$10,000,000 by D. E. Thompson, U. S. Ambassador to Mexico. It runs from Gamboa, Oax., Mexico, to Mariscal, Guat., 286 miles.

Peninsular Railway.—This company was organized in California to take over the electric lines of the Southern Pacific. Its capitalization is \$12,000,000, and it controls at present the Peninsular Railroad, the San Jose & Los Gatos Interurban and the Santa Clara Interurban. It comprises all the present and contemplated railway systems on the San Francisco peninsula from San Francisco to San Jose and vicinity. The estimated length of the lines under the control of the Peninsular Railway is 222 miles.

Pennsylvania Railroad.—See Elizabeth River; also N. & W.

Pine Creek Railways.—See N. Y. C. & H. R.

Pontiac, Oxford & Northern.—Control of this road was acquired by the Grand Trunk. It runs from Pontiac, Mich., to Caseville, 100 miles.

Raleigh & Western.—John B. Lennig, president of the Frankford Trust Company of Philadelphia, bought for \$25,000 from the receiver of the Raleigh & Western the eight-mile Egypt Railroad, formerly operated by the Raleigh & Western from Colon, N. C., to Cumnock, and also the Raleigh & Western, which is projected from Cumnock via Gulf, N. C., to Asheboro. Mr. Lennig owns the Durham & Charlotte, from Gulf to Troy, about 40 miles, and the Sanford & Troy, incorporated to build a 14-mile line between the places named.

Rapid City, Black Hills & Western.—This company, incorporated in South Dakota, took over the Missouri River & Northwestern, Rapid City, S. Dak., to Mystic, 32 miles, which had previously been sold at foreclosure to a syndicate of holders of its bonds.

Rio Grande, Sierra Madre & Pacific.—See Mexico Northwestern.

St. Louis & San Francisco.—See C. R. I. & P.

Sierra Madre & Pacific.—See Mexico Northwestern.

Spokane & Inland Empire.—See Great Northern.

Spuyten Duyvil.—See New York Central & Hudson River.

Stephenville North & South Texas.—A half interest in this property was sold to St. Louis interests. It was completed in December, 1907, from Stephenville, Tex., to Hamilton, 43 miles.

Sugarland.—This road, 7½ miles long, connecting the Texas state penal farm with the International & Great Northern, was sold by the state of Texas to W. T. Eldredge, its president, who is proprietor of a nearby sugar refining plant. He paid \$32,000 and agreed to put the road in good condition. He also agreed to buy all the sugar cane produced on the state lands for two years at a fixed price.

Syracuse, Geneva & Corning.—See N. Y. C. & H. R.

Tarrytown, White Plains & Mamaroneck.—See New York, New Haven & Hartford.

Toledo & Ohio Central.—See Hocking Valley.

Toluca, Marquette & Northern.—This road was sold at foreclosure to the Rutland, Toluca & Northern, which had been organized to take it over. (See editorial on "Receiverships and Foreclosures" elsewhere in this issue.)

Union Pacific.—This road bought a half interest in the line of the Chicago, Milwaukee & Puget Sound from Black River Junction, Wash., to where it crosses the Puyallup river, three miles from Tacoma.

Wisconsin Central.—See Minneapolis, St. P. & S. Ste. Marie.

Zanesville & Western.—See Hocking Valley.

DIVIDEND CHANGES AND NEW RAILWAY SECURITIES IN 1909.

The tables which we print herewith showing the dividend changes and the arrangements made for the sale of new securities by railways in the calendar year 1909 reflect quite accurately the improved earnings of railways and the desire of capitalists to invest their money, hoarded in 1908, in interest-bearing securities. The two phenomena, changes in the rates of dividends paid on stock and the sale of stock and bonds by railways, are closely correlated. Moreover, this year the kind of security which the railways found it profitable to sell is directly affected by the changes in dividend rates.

The general increase in dividend payments in 1909 over 1908 is, of course, primarily because of increased gross earnings. There is another cause of increased payments in 1909, however, which had a considerable effect on the gross payments made. This is what is known as melon-cutting and is a distribution in one form or another of accumulated surplus of previous years. Generally this surplus as carried on the balance sheet represents the reinvestment of net earnings in the property, and to distribute it it is necessary either to increase the outstanding capital stock by the issue of new stock which may be paid in the form of stock dividends to shareholders or which may be offered to stockholders pro rata at a price so much below the market quotations that the "rights" are themselves a dividend. Another way of distributing this surplus is to issue bonds (which may not legally be paid directly as dividends), sell these bonds and declare a cash dividend. It will be seen, therefore, that if a road desires to distribute its invested surplus either through the sale of bonds or by the giving of subscription "rights" it will only find it profitable to do so when there is a good market for securities.

Payment by the Delaware, Lackawanna & Western of dividends totaling 85 per cent. is the most noticeable example of melon-cutting in the list that we give. The Lackawanna has been paying a regular annual dividend of 10 per cent. and an extra dividend each year of 10 per cent. so that in reality its annual rate was 20 per cent. The company has no bonds outstanding and had a very large accumulated surplus. It was found necessary under the ruling of the Supreme Court of the United States in the Commodities Clause case to form a company which should buy the coal mined by the D. L. & W. at the mines so that at the time of transportation of this coal the Lackawanna railway should have no interest in it. The directors decided to sell the stock of a D. L. & W. coal company to its stockholders in proportion of one share of coal company's stock for each two shares of Lackawanna stock held. To enable stockholders to pay for this coal company's stock a special dividend of 50 per cent. in cash was declared out of accumulated surplus and in addition 15 per cent. was paid in stock of the D. L. & W. R. R. as a special dividend. It was rumored in November that the regular "extra" dividend of 10 per cent. would be reduced or not declared this year because that 10 per cent. represented coal profits. However, this 10 per cent. was declared and from the reports of current earnings of the railway company there does not seem to be any reason why the rate should not be continued. As yet no dividend has been declared on the coal company stock.

The only important decrease in the rate of dividend noted in our table is in the case of the St. Louis, Iron Mountain & Southern. The Missouri Pacific and the Iron Mountain have recently made a comprehensive readjustment of their finances and the lower rate paid in 1909 marks conservatism rather than an inability to pay the old rate.

It is noticeable that both the New York Central & Hudson River and the Pennsylvania Railroad companies, which reduced their dividends in 1908, did not increase them in 1909, but both these companies sold to stockholders large issues of stock at a price considerably below the market so that the

"rights" so given were in the nature of an extra dividend. Moreover, in the case of the Pennsylvania it will be noted that the two largest subsidiaries of the Pennsylvania Railroad, the Panhandle and the Pennsylvania Company, increased their dividend rates late in 1909, which may be significant as to the Pennsylvania Railroad's dividend policy in 1910.

It is necessary to make some explanation of the headings in the dividend table. The column headed "Declared" in 1909 does not in every case give the amount which was actually paid in the calendar year. For instance, late in December a number of important roads declared semi-annual dividends,

DIVIDEND CHANGES.

*Name of Company and class of stock.	Declared in 1909 per cent.	Present an'l rate per ct.	†Date of establishment of present rate.	Amt. paid in 1908 per cent.
Alabama Gt. South'n com.	2	6	May.	None.
Atch., Top. & S. Fe. com.	5½	6	October.	5
Atl. Coast Line R.R. com.	6	6	May.	5
Atlantic Coast Line Co.	9	10	September.	8
Brooklyn Rapid Transit.	4	4	February.	None.
Central of N. J.	10½	8	December.	8
Cent. New Eng. Inc. bds.	4	..	September.	None.
Chesapeake & Ohio	3	4	May.	1
Chicago & Alton com....	4	4	January.	1
Chic., Ind. & L. com....	3½	3½	June.	3
Cornwall & Lebanon.....	8	8	.....	7
Del., Lack. & Western....	85½	20	July.	20
Del. Riv. R.R. & Brge Co.	6	8	December.	6
Dubuque & Sioux City....	3½	3½	August.	1½
Fonda, Johnston & G. pf	3	6	June.	None.
Grand Trunk 1st pf.....	5	5	April.	Deferred.
Grand Trunk 2d pf.....	2½	5	April.	Deferred.
Green Bay & Westn B deb.	¾ of 1	..	February.	¾ of 1
Gulf & Ship Island.....	..½	4	July.½	None.
Interoceanic of Mexico:				
1st preferred	5	5	December.	4½
2d preferred	1	..	December.	None.
Keokuk & Des Moines ..	1	..	April.	1½
Lehigh Valley	6	6	December.	6½
Louisville & Nashville....	5½	6	June.	5½½
Louisville & Nashville....	6½	7	December.	5
Mexican Northern	2	4	November.	None.
N. J. & Seashore com....	4½	5	October.	4
N. O. & Northeastern....	5	5	October.	4
Pennsylvania Company ..	8	8	December.	7
P. C., C. & St. L. com...	4½	5	December.	4
Reading Company	5	6	December.	4
Rutland 7½-cum. pf. stk.	None.	..	January.	1½
St. J., S. B. & So. com...	3	2½	.....	2
St. Louis, I. M. & South'n	4	4	July.	5
St. L. Southwestern pf...	4½	5	December.	None.
Sixth Ave. R.R. (N. Y.)..	1½	..	April.	7
V., Shreve. & P. pf. & com	5	..	October.	None.
Wabash deb. A bonds....	6	6	January.	3
Wabash Deb. B. bonds....	2	2	.....	1

*When neither common nor preferred stock are mentioned, it is understood that the company has but one class of stock outstanding.

†When an "extra" dividend was paid, the date given in this column is that on which the extra dividend was declared.

§ An extra cash dividend of 50 per cent. and a stock dividend of 15 per cent was declared in July, 1909.

|| The payment of dividends in 1908 was deferred, and in 1909 4 per cent. was declared "for the year 1908."

‡ The 5½ was cash. In addition there was paid in 1908 1 per cent. in Louisville Property Co. stock.

¶ The two semi-annual dividends of ½ per cent. each, declared in addition to the regular semi-annual dividend of 1 per cent., were declared as "extra" dividends.

° The annual rate guaranteed by the Metropolitan Street Railway is 7 per cent., but owing to the Metropolitan Street Railway being in the hands of a receiver, and the general unsettled condition of street railway fares in New York, the Sixth Avenue company decided not to pay the three quarterly dividends due in April, July and October.

‡ Declared in October.

¹ A special dividend of 2 per cent. was declared in December. The Lehigh & Wilkesbarre Coal Co., nearly all of the stock of which is owned by the Central of New Jersey, declared an initial dividend of 6½ per cent., calling for a payment to the Central of New Jersey of a slightly greater amount than was needed for the Central's own 2 per cent. special dividend.

² In 1908 the regular annual rate was 4 per cent., and two extra dividends of 1 per cent. each were declared. In December, 1909, a regular 3 per cent. semi-annual dividend was declared, placing the stock on a regular 6 per cent. basis.

which declaration made an increase in the rate and in some cases the dividend was not actually paid in December but will be paid in January. As the object of the table is to show what the management of the railways are doing rather than what investors are receiving, it is proper to treat a declaration of increased dividends in December, 1909, as a change in the dividend rate taking place in that year.

During the first part of 1909 there was a steadily improving bond market. Prices for gilt edged securities rose to such an extent that investors turned to more speculative bond

SECURITIES OF STEAM RAILWAYS ISSUED IN 1909.

Name of Company.	Kind of security issued.	Amount sold.	Amount of refunding covered.	Month in which sold.
Alberta & Grt. Waterways.....	First mortgage 5 per cent. debenture bonds of 1909-1959	7,400,000	.....	November.
Atchison, Topeka & Santa Fe.....	Convertible 4 per cent. bonds of 1909-1959	\$28,258,000	.....	June.
Atlanta, Birmingham & Atlantic.....	Two-year 5 per cent. receiver's certificates	3,250,000	.....	.....
Atlantic Coast Line.....	4 per cent. mortgage bonds of 1909-1939	23,562,500	23,562,500	November.
Baltimore & Ohio.....	Pittsburgh, Lake Erie & West Virginia system refunding mortgage 4 per cent. bonds, 1901-1941	13,100,000	.....	February.
Belt R. R. and Stock Yards Co.....	4 per cent. 30-year new mortgage bonds	1,000,000	1,000,000	June.
Boston & Albany.....	25-year 4 per cent. bonds ¹	4,500,000	.....	June.
Boston & Maine.....	Debenture 4½ per cent. bonds of 1909-1929	11,700,000	.....	January.
Boston R. R. Holding Co.....	4 per cent. bonds ²	16,441,125	.....	.....
Buffalo, Rochester & Pittsburgh.....	Stock ²	2,421,600	.....	.....
	Series E 4½ per cent. equipment bonds	580,000	.....	Sept. and Oct.
	Series F 4½ per cent. equipment bonds	137,000	.....	August.
	Series G 4 per cent. equipment bonds	740,000	.....	October.
Canadian Northern.....	First mortgage 4 per cent. debenture stock ³	\$1,200,000	.....	June.
" ".....	New 4 per cent. perpetual consolidated deb. stock	(\$6,000,000)	.....	.....
" ".....	Winnipeg Terminal 4 per cent. bonds of 1909-1939	\$850,000	.....	November.
" ".....	Equipment trust, series S, 4½ per cent. first mortgage bonds	(\$4,250,000)	.....	.....
Can. Nor. Ont.....	Perpetual cons. 4 per cent. debenture stock	\$3,000,000	.....	July.
		1,000,000	.....	May.
		\$800,000	.....	June.
		(\$3,893,333)	.....	.....
Canadian Pacific.....	Ordinary stock	3,984,000	.....	March.
Carolina, Clinchfield & Ohio.....	Mortgage 5 per cent. notes of 1909-1919	5,000,000	.....	July.
" ".....	5 per cent. equipment notes, series A	2,600,000	.....	February.
Chesapeake & Ohio.....	General funding and improvement mortgage 5 per cent. 20-year bonds	11,000,000	7,500,000	February.
Chicago & Northwestern.....	General mortgage 3½ per cent. bonds of 1897-1987	10,351,000	10,351,000	January.
" ".....	Manitowoc, Green Bay & North Western first mortgage 3½ per cent. bonds ⁴	3,750,000	.....	January.
" ".....	Milwaukee & State Line first mortgage 3½ per cent. bonds ⁴	2,500,000	.....	January.
Chicago & Western Indiana.....	Consolidated mortgage 4 per cent. bonds of 1902-1952 ⁵	12,271,000	8,000,000	January.
		1,000,000	.....	November.
Chicago, Burlington & Quincy.....	General mortgage 4 per cent. bonds of 1908-1958	20,000,000	276,000 ⁶	March.
Chicago, Cincinnati & Louisville.....	Receiver's certificates	1,400,000	1,000,000	November.
Chicago, Milwaukee & St. Paul.....	Debenture 4 per cent. bonds of 1909-1934	50,000,000	.....	June and Nov.
Chicago.....	General mortgage 4 per cent. bonds of 1889-1998	25,000,000	22,097,000 ^{7a}	December.
Chicago, Rock Island & Pacific.....	Series C, 4½ per cent. equipment trust notes maturing semi-annually from April 1, 1910, to Oct. 1, 1919	5,300,000	.....	October.
" ".....	First and refunding mortgage 4 per cent. bonds of 1904-1934	5,214,000	2,714,000	Jan., Mar., Apr., May
Delaware & Eastern.....	First mortgage 5 per cent. bonds of 1907-1957	3,500,000	.....	September.
Delaware, Lackawanna & Western.....	Stock	4,077,000 ⁸	.....	July.
Del. Lack. & Western Coal Co. ⁹	Stock	6,800,000	.....	July.
Denver, Boulder & Western.....	First mortgage 5 per cent. income bonds	700,000	.....	July.
Denver & Rio Grande.....	First and refunding mortgage 5 per cent. bonds of 1905-1955	5,011,000	6,400,000 ¹⁰	October.
Denver, North-Western & Pacific.....	Colorado-Utah Construction Co. 6 per cent. notes, 1909-1911	4,000,000 ^{10a}	.....	May.
Elgin, Joliet & Eastern.....	First mortgage Chicago, Lake Shore & Eastern 4½ per cent. 60-year bonds ¹¹	9,000,000	.....	May.
Erie.....	General lien 4 per cent. bonds of 1895-1996	1,000,000 ¹²	.....	July.
" ".....	Collateral 6 per cent. notes	1,200,000	.....	January.
" ".....	" 6 " " "	565,000	.....	February.
" ".....	" 6 " " "	3,522,000	.....	July.
" ".....	" 6 " " "	186,000	.....	October.
Florida East Coast.....	First mortgage 4½ per cent. bonds of 1909-1959	10,000,000	16,000,000	June.
Fonda, Johnstown & Gloversville.....	General mortgage 5 per cent. ¹³ 1909-1959	20,000,000	.....	July.
Grand Trunk Pacific.....	6 per cent. cumulative preferred stock	500,000	.....	April.
" ".....	First mortgage 3 per cent. bonds of 1905-1962 ¹⁴	\$2,000,000	.....	July.
" ".....		(\$10,000,000)	.....	.....
" ".....	4 per cent. bonds of 1909-1919	\$10,000,000 ¹⁵	.....	.....
" ".....	4 per cent. debenture stock	\$1,000,000	.....	February.
" ".....		(\$5,000,000)	.....	.....
Grand Trunk Pacific Branch Lines Co.....	4 per cent. first mortgage stg. bonds, due 1939	\$1,000,000 ¹⁶	.....	May.
		(\$5,000,000)	.....	.....
Great Northern.....	Consolidated mortgage 4 per cent. bonds of the St. Paul, Minneapolis & Manitoba	5,877,000	5,877,000	¹⁷ Nov., '08, Dec., '09.
" ".....	Eastern Railway of Minnesota Northern Division first mortgage bonds of 1898-1948	2,131,000	.....	April.
Houston Belt & Terminal.....	First mortgage sinking fund 5 per cent. bonds of 1907-1937	2,246,000	.....	April.
Kanawha & Michigan.....	Second mortgage 5 per cent. bonds of 1907-1927	2,500,000	.....	November.
Kansas City, Mexico & Orient.....	First mortgage 4 per cent. 50-year bonds	1,500,000	.....	June.
" ".....	Common stock ¹⁸	600,000	.....	June.
" ".....	Preferred stock ¹⁸	600,000	.....	June.
Kansas City Southern.....	Refunding and improvement mortgage 5 per cent. bonds of 1909-1950	10,000,000	5,100,000	June.

¹Guaranteed principal and interest by the New York Central & Hudson River.

²The bonds and stock were issued to pay for \$12,570,300 common stock and \$5,082,600 preferred stock of the Boston & Maine. The New Haven guarantees principal and interest of the holding company bonds.

*On £600,000 (\$3,000,000) of these bonds the principal and interest is guaranteed by the government of Saskatchewan, and on the remaining £600,000 (\$3,000,000) the principal and interest is guaranteed by the government of Alberta.

⁴The principal and interest on these bonds guaranteed unconditionally by the Chicago & North Western.

⁵\$10,000,000 of these bonds were deposited as collateral for 5 per cent. notes dated Feb. 1, 1907, and called for payment Feb. 1, 1909.

*Of the total \$20,000,000 bonds, \$13,724,000 were sold to reimburse the Burlington for the amount spent in the acquisition of the Colorado & Southern controlling stock.

⁷\$25,000,000 sold in June and \$25,000,000 sold in November.

^{7a}This refunding, it is understood, is to be done in 1910 with the proceeds of the bond sale arranged for in 1909.

^aOf this amount \$3,930,000 was used to pay a stock dividend of 15 per cent.

"This was the company organized to buy the coal at the mines of the Delaware, Lackawanna & Western Railroad, and its stock was offered to the railway company stockholders on the basis of one share of stock of the coal sales company for each four shares of stock held of the railway company.

^aThese bonds were issued to pay for the property of the Colorado & North Western, which was taken over by the Denver, Boulder & Western.

¹⁰This is \$6,400,000 Western Pacific second mortgage 5 per cent. bonds bought by the Denver & Rio Grande from the Western Pacific and deposited under the first and refunding Denver & Rio Grande mortgage.

¹⁰a Guaranteed by D. H. Moffat, president of the Denver, North Western & Pacific, and secured by \$8,000,000 first mortgage 4 per cent. bonds of the Denver, North Western & Pacific.

¹²These bonds were pledged as additional security under the \$15,000,-

000 6 per cent. collateral bonds of 1908-1911.

¹³Interest is non-cumulative and is payable from surplus.

¹⁴Guaranteed, principal and interest, by the government of the Dominion of Canada.

¹⁵The bonds were issued to the Canadian government to be held as security for a loan of \$10,000,000 which bears interest at 4 per cent. and is to be repaid in 10 years.

¹⁰The bonds were issued by the Grand Trunk Pacific Branch Lines Company (a subsidiary company of the Grand Trunk Pacific) to provide funds for the construction of branch lines in the provinces of Saskatchewan and Alberta, and are guaranteed, principal and interest, for 30 years by the provincial governments to the extent of \$13,000 per mile, as follows: Saskatchewan, \$500,000; Alberta, \$500,000. Additional issues will be made as construction work proceeds.

¹⁷The bonds were issued from day to day for refunding purposes.

¹⁸These bonds were given as a bonus of 40 per cent. to purchasers of bonds.

SECURITIES OF STEAM RAILWAYS ISSUED IN 1909.—Continued.

Name of Company.	Kind of security issued.	Amount sold.	Amount of refunding covered.	Month in which sold.
Long Island	Ten-year 4 per cent. debenture bonds.....	16,500,000 ¹⁹	.....	.....
Louisv. & Nashville, Paducah & Memphis	First mortgage 4 per cent. bonds, 1896-1946.....	4,500,000 ²⁰	.....	May.
Maine Central	Debenture 4 per cent. notes of 1909-1914.....	2,000,000	.....	March.
Manistee & North Eastern.....	First mortgage 5 per cent. bonds dated Jan. 1, 1909..	1,015,000	.....	May.
Manitou & Pike's Peak	First mortgage 5 per cent. bonds.....	303,000	.....	Various dates.
Mexican Northern	First mortgage 5 per cent. bonds.....	500,000	500,000	.....
Mexican Railway	First mortgage 6 per cent. bonds.....	708,000	708,000 ²¹	June.
Mexico North Western	4½ per cent. second debenture bonds, due 1980.....	£500,000	.....	March.
.....	.....	(\$2,500,000)	.....	.....
.....	.....	£3,082,600	.....	Various.
.....	.....	(\$15,001,987)	.....	.....
Michigan Central	4 per cent. debenture bonds of 1909-1929.....	7,634,000	.....	April.
Minneapolis & St. Louis	5 per cent. equipment bonds.....	600,000	.....	June.
.....	First and refunding mortgage 4 per cent. bonds of 1899-1949	350,000	1,015,000 ²²	January.
.....	First and refunding mortgage 4 per cent. bonds of 1899-1949	1,015,000	.....	February.
Minneapolis, St. Paul & S. Ste. Marie... ..	Consolidated mortgage 4 per cent. bonds of 1888-1938..	1,000,000	.....	August.
.....	Common stock	4,032,000	.....	March.
.....	Preferred stock	2,016,000	.....	March.
Mississippi Central	First mortgage 5 per cent. bonds of 1909-1949.....	4,100,000	3,254,000	July.
Missouri, Kansas & Texas	First and refunding mortgage 4 per cent. bonds.....	3,310,000	.....	February, 1909.
Missouri, Oklahoma & Gulf.....	First mortgage 5 per cent. bonds of 1904-1944.....	2,500,000	.....	March.
Missouri Pacific	Stock	83,251,000	83,251,000	.....
.....	Bonds ²³	85,993,000	85,993,000	.....
.....	Refunding mtg. convertible 5 per cent. bonds of 1910.	29,806,000	.....	November.
New York Central & Hudson River.....	First series (S. D. & P. M.) 3½ per cent. 50-year bonds.	2,500,000	.....	July.
.....	Stock	44,658,000	21,966,615	December.
New York, New Haven & Hartford.....	One-year 4 per cent. notes, dated March, 1909.....	5,000,000	.....	March.
.....	Stock	50,000,000	.....	December.
Norfolk & Southern	One-year 6 per cent. receiver's certificates.....	1,000,000	.....	January.
Norfolk & Western	One-year receiver's certificates.....	442,865	.....	December.
.....	Divisional first lien and general mortgage 4 per cent. bonds, 1904-1944	10,000,000	.....	February.
.....	Equipment certificates, series L, M, N and O.....	2,800,000	.....	October.
.....	Common stock.....	1,530,000	.....	December.
Old Colony R. R.....	Stock	985,000	1,912,000	November.
Pennsylvania Railroad	General first mortgage 4 per cent. equipment trust certificates	8,100,000	.....	May.
.....	Stock	80,000,000	.....	November
Pittsburgh, Shawmut & Northern	Receiver's certificates	1,600,000	1,600,000	April.
St. Louis & San Francisco R. R.....	Series P, 5 per cent. equipment bonds, dated Oct. 1, 1909, maturing about \$125,000 semi-annually from April 1, 1910, to Oct. 1, 1919.....	2,650,000	.....	October.
.....	General lien 15-20-year 5 per cent. bonds.....	5,000,000	.....	June.
.....	General lien 15-20 year 5 per cent. bonds.....	7,500,000	.....	August.
.....	General lien 15-20-year 5 per cent. bonds.....	500,000	.....	October.
.....	Refunding 4 per cent. bonds.....	1,016,000	.....	July.
.....	Series N 5 per cent. equipment notes.....	909,000	.....	July.
.....	Series P 5 per cent. equipment notes.....	2,650,000	.....	October.
St. Louis So. Western.....	5 per cent. equipment notes.....	725,000	.....	December.
Southern Pacific	Common stock ²⁴ .....	.....	.....	.....
.....	4½ per cent. bonds ²⁵ .....	.....	.....	.....
.....	Convertible 4 per cent. bonds of 1909-1929.....	82,000,000 ²⁶	.....	June.
Southern Railway	Development and general mortgage 4 per cent. bonds..	15,000,000	15,000,000 ²⁷	May.
.....	Development and general mortgage 4 per cent. bonds..	5,000,000	.....	April.
.....	Development and gen. mtg. 4 per cent. (series A) bonds	21,333,000	16,000,000	February.
.....	4½ per cent. equipment trust bonds (series M)	1,400,000	.....	April.
Spokane International	First mortgage 5 per cent. bonds, 1905-1955.....	4,200,000	.....	September.
Texas Midland	First mortgage 4 per cent. bonds of 1908-1938.....	2,000,000	.....	.....
Washington Terminal Co.....	First mortgage 4 per cent. bonds ²⁸	2,000,000	.....	.....
Western Maryland	Receiver's 5 per cent. certificates of April 1, 1909.....	1,250,000	.....	April.
.....	Receiver's 4½ per cent. certificates.....	700,000 ²⁹	.....	April.
.....	Receiver's 5 per cent. certificates of March 1, 1909-1911	2,000,000	1,133,629	February.
.....	Receiver's 5 per cent. equipment certificates.....	536,000	.....	January.
Western Pacific	Second mortgage 5 per cent. bonds.....	17,000,000	.....	.....
Wheeling & Lake Erie	Receiver's 6 per cent. certificates of 1909-1911.....	373,000	.....	March.
.....	Receiver's 6 per cent. certificates of 1909-1911.....	1,429,000	.....	May.
Wichita Falls & North-Western.....	First mortgage 5 per cent. bonds of 1909-1939.....	2,300,000	.....	.....

¹⁹The Long Island is to use \$6,032,951 of the new bonds to repay the Pennsylvania for loans advanced for construction purposes. None of the certificates had been actually issued up to Dec. 17.

²⁰The \$4,500,000 bonds sold form part of the collateral securing \$23,000,000 notes, which were called for payment April 1, 1909.

²¹These bonds were due Dec. 1, 1910, but through an arrangement made in June, 1909, with stockholders they were extended to December, 1930.

²²Of these \$455,000 were not refunded in 1909.

²³Arrangements for the sale of these bonds have been made, but no official information as to the class of bonds has been made public.

²⁴This stock and the 4½ per cent. bonds were issued in exchange for 7 per cent. preferred stock, which was called for conversion or redemption in July.

²⁵These bonds were offered to stockholders on the basis of 30 per cent. of their holdings of stock, so that the Union Pacific received as its share \$37,500,000 bonds, which it sold in July to its bankers.

²⁶J. P. Morgan & Co., who bought the general mortgage bonds, offered to exchange these and bonds previously bought for 6 per cent. notes of the \$15,000,000 issue due May 1, 1911, the bonds to be taken at 80 and the notes at 100½. In April the Southern Railway also drew by lot for redemption \$3,891,000 6 per cent. convertible notes.

²⁷Guaranteed, principal and interest, jointly by the Baltimore & Ohio and the Philadelphia, Baltimore & Washington.

²⁸Proceeds from this sale were used to pay the interest due April 1 on the outstanding first mortgage bonds.

issues and, as usual in the summer, the bond market became comparatively dull.

The two important railways which made large sales of bonds in 1909 were the Chicago, Milwaukee & St. Paul and the St. Louis & San Francisco. The St. Paul had but recently sold \$90,000,000 of stock and is paying dividends at the rate of 7 per cent., so that the reasons for an issue of bonds rather than stock is evident. The market price of the Frisco's stock, the first preferred is selling in the neighborhood of 74, is the obvious reason why it issued bonds when in need of new funds. The Frisco's sale of bonds was particularly interesting because larger blocks of them were placed abroad by Speyer & Co.

Weaker companies found a market for their bonds when in-

vestors turned from the high grade bonds of the large strong railways because of the low income yield. Companies also whose credit was not first-class but which were badly in need of a readjustment of their general indebtedness found it possible to sell their bonds and provide themselves with cash both for paying off loans and bills and for working capital. The Southern Railway, which sold \$41,000,000 of development and general mortgage bonds and the Missouri Pacific, which made arrangements for the sale of \$86,000,000 bonds, are examples of such companies.

The strong roads found it profitable to issue convertible bonds on account of the high price at which their stock was selling and the prospects of even higher prices, so that the convertibles brought more than their security and interest

rate would otherwise warrant. The sale in June by the Southern Pacific of \$82,000,000 convertible 4 per cent. bonds exemplifies the success of such a policy. These 4 per cent. bonds are secured only by the general credit of the Southern Pacific Company and not by any mortgage on specifically named property, bear interest at only 4 per cent., and are now selling well above par. This is because the bonds are convertible into Southern Pacific common stock at 130. When the bonds were offered to stockholders in June Southern Pacific common was selling considerably below 130 and the bonds were successfully offered at 96. Since then the price of the stock has risen to above 130 and is now selling in that neighborhood and the price of the bonds has, of course, risen accordingly. The Atchison is another road which successfully sold convertible bonds. These are roads which, because of the comparatively undeveloped state of the country through which they run, have prospects that gives a speculative character to their stocks. Roads like the Pennsylvania, the New York Central & Hudson River and the New York, New Haven & Hartford are standard railways whose earnings are more certain than such roads as the Southern Pacific and the Santa Fe, and the price of their stock fluctuating less widely than the undeveloped railways sells on a basis more nearly comparable to that of high grade bonds. These companies found a ready market for their stock and by the issue of this stock to shareholders funds were secured at a comparatively low rate and at the same time, as we have said, the payment of an extra dividend was effected.

It is rather interesting to note that apparently the passage of the new corporation tax law has had no effect on the kind of security issued by railways. This law, it will be recalled, through some mental twist in the minds of the legislature, taxes stock dividends and not interest payment on bonds. Probably the comparatively small amount of this tax, 1 per cent. of net earnings, accounts for the disregard of the premium put on a bond issue as compared with a sale of stock.

The table is probably not entirely complete. Some companies refuse to give out information as to the arrangements made for sale of securities, but in every case where it was

possible, the figures given are official. By the amount sold we mean the total amount for the sale of which arrangements have been made. Probably in a number of cases the delivery, for instance, of certificates has not been made. This is notably the case with the Missouri Pacific, which has simply made arrangements through its bankers for the refunding of its outstanding bonds, and it is doubtful whether actual cash payments and exchange of securities have yet taken place. In many cases the roads have not received the money or have only received part of it from the sale of their securities, as shown in our table. For instance, the New York Central & Hudson River offered in December their \$44,000,000 stock to shareholders at par. This is considered, for our purposes, as an arrangement made in 1909, although the first payment on stock will not be made until in 1910. Electric roads have been entirely disregarded, and the sale of securities amounting to less than \$500,000 has also been disregarded. No attempt has been made to get the complete list of securities sold by terminal companies, except in cases where these securities are guaranteed by other railway companies.

Late in December a number of railways made announcements of sales of securities that are to take place early in 1910. The Canadian Pacific, the M., K. & T., the San Pedro, Los Angeles & Salt Lake, and the Chicago & Northwestern are among the more important of these companies.

RAIL ORDERS IN 1909.

The following list of rail orders placed during the current calendar year is incomplete, being compiled solely from such returns as we were able to get directly from the railways. While it could have been made approximately complete by taking figures of rail orders as published in our news columns throughout the year, such a summary would not be surely accurate in details, and the details are more valuable than totals. Enough companies are included in this compilation to represent fairly the trend of present practice as regards the sections, weights and materials specified:

	Tonnage.	Wt.	Section.	Material.	Maker.
Ann Arbor	6,133	85	.....	.....	Lackawanna.
Arizona & New Mexico.....	1,179	75	A. S. C. E.	Open hearth.	Colorado.
.....	4,200	85	A. R. A.	Open hearth.	Illinois.
.....	153,000	90	Santa Fe.	Open hearth.	Illinois.
Atchison, Topeka & Santa Fe.....	50,000	90	Santa Fe.	Open hearth.	Colorado.
.....	1,000	90	.....	Titanium.	Lackawanna.
.....	150	85	A. S. C. E.	Manganese.	Lackawanna.
Atlanta, Birmingham & Atlantic.....	2,500	80	A. S. C. E.	Bessemer.	Tennessee.
Atlantic, Quebec & Western.....	3,500	60	A. S. C. E.	Bessemer.	Algoma.
.....	1,100	60	A. S. C. E.	Open hearth.	Algoma.
.....	7,350	90	A. R. A.—B.	Bessemer.	Maryland.
.....	13,400	90	A. R. A.—B.	Bessemer.	Carnegie.
.....	5,000	90	A. R. A.—B.	Bessemer.	Cambria.
.....	2,000	90	A. R. A.—B.	Bessemer.	Illinois.
.....	1,000	90	A. R. A.—A.	Bessemer.	Carnegie.
.....	3,600	90	A. R. A.—A.	Bessemer.	Illinois.
Baltimore & Ohio.....	13,900	100	A. R. A.—B.	Bessemer.	Maryland.
.....	2,000	100	A. R. A.—A.	Bessemer.	Carnegie.
.....	2,000	100	A. R. A.—A.	Bessemer.	Illinois.
.....	5,400	90	A. R. A.—B.	Open hearth.	Bethlehem.
.....	1,000	90	A. R. A.—B.	Open hearth.	Illinois.
.....	2,000	90	A. R. A.—A.	Open hearth.	Illinois.
.....	600	90	A. R. A.—B.	Nickel chrome.	Bethlehem.
Bangor & Aroostook	9,700	70	.....	Bessemer.	Maryland.
Bessemer & Lake Erie.....	3,500	100	A. R. A.—B.	Bessemer.	Carnegie.
.....	10,000	75	B. & M.	Bessemer.	Penna. and Maryland.
Boston & Maine.....	5,000	85	A. S. C. E.	Open hearth.	Bethlehem.
Buffalo & Susquehanna	650	80	A. S. C. E.	Bessemer.	Lackawanna.
.....	1,000	90	A. S. C. E.	Open hearth.	Carnegie.
.....	2,750	90	A. S. C. E.	Open hearth.	Bethlehem.
Buffalo, Rochester & Pittsburgh.....	1,500	90	A. S. C. E.	Bessemer.	Lackawanna.
.....	3,500	90	A. S. C. E.	Titanium.	Lackawanna.
.....	3,500	90	A. S. C. E.	Bessemer.	Carnegie.
Carolina, Clinchfield & Ohio.....	8,000	.....	.....	Open hearth.	.....
.....	1,897	80	A. S. C. E.	Bessemer.	Pennsylvania.
Central New England	3,368	80	A. S. C. E.	Open hearth.	Pennsylvania.
.....	1,700	80	A. S. C. E.	Open hearth.	Bethlehem.
.....	9,100	80	A. S. C. E.	Open hearth.	Tennessee.
Central of Georgia	3,000	90	C. of Ga.	Open hearth.	Tennessee.
.....	400	90	A. R. A.	Open hearth.	Tennessee.
Central of New Jersey.....	10,000	100	A. R. A.—A.	Open hearth.	.....
.....	2,000	100	A. R. A.—A.	Titanium.	Lackawanna.
.....	6,400	80	A. R. A.	Bessemer.	Illinois.
.....	2,600	80	A. S. C. E.	Bessemer.	Illinois.
Chicago & Alton.....	500	80	A. S. C. E.	Open hearth.	Lackawanna.
.....	190	80	A. S. C. E.	Titanium.	Lackawanna.
.....	150	85	I. S. Co.	Bessemer.	Illinois.
Chicago & Eastern Illinois.....	4,025	85	I. S. Co.	Open hearth.	Illinois.

	Tonnage.	Wt.	Section.	Material.	Maker.
Chicago & Erie	1,240	90	.....	Bessemer.	Illinois.
Chicago, Indianapolis & Louisville.....	2,500	75	.....	Bessemer.	Illinois.
	13,100	100	A. S. C. E.	Bessemer.	Illinois.
	31,800	90	A. R. A.—A.	Bessemer.	Illinois.
	3,400	85	A. S. C. E.	Bessemer.	Illinois.
	720	75	A. S. C. E.	Bessemer.	Illinois.
Chicago, Milwaukee & St. Paul.....	5,980	65	A. S. C. E.	Bessemer.	Illinois.
	5,000	90	A. R. A.	Titanium.	Illinois.
	4,000	100	A. S. C. E.	Titanium.	Lackawanna.
	1,000	90	A. R. A.—A.	Titanium.	Lackawanna.
	500	90	A. R. A.	Bessemer Electric.	Illinois.
Chicago, Rock Island & Pacific.....	35,690	85	I. S. Co.	Bessemer.	Illinois.
	6,300	85	I. S. Co.	Open hearth.	Illinois.
	600	85	Special.	Bessemer.	Carnegie.
Cincinnati, Hamilton & Dayton.....	600	85	Special.	Bessemer.	Lackawanna.
Cincinnati, New Orleans & Texas Pacific.....	4,600	85	A. S. C. E.	Open hearth.	Tennessee.
Coal & Coke	1,500	85	A. S. C. E.	Bessemer.	Cambria.
Cumberland Valley	2,400	100	Pennsylvania.	Open hearth.	Pennsylvania.
Delaware, Lackawanna & Western.....	24,000	91	D., L. & W.	Open hearth.	Bethlehem and Lacka.
Denver & Rio Grande.....	1,400	85	C. F. & I. Co.	Bessemer.	Colorado.
	2,178	85	C. F. & I. Co.	Open hearth.	Colorado.
Detroit & Mackinac.....	2,000	85	A. S. C. E.	Bessemer.	Lackawanna.
Duluth & Iron Range.....	1,500	80	A. S. C. E.	Bessemer.	Illinois.
Duluth & Northern Minnesota.....	800	80	A. S. C. E.	Bessemer.	Carnegie.
	500	56	.....	Bessemer.	Illinois.
Erie	4,900	90	A. S. C. E.	Bessemer.	.....
	1,230	100	A. S. C. E.	Open hearth.	Bethlehem.
Evansville & Terre Haute.....	550	85	A. S. C. E.	Open hearth.	Illinois.
Fort Worth & Denver City.....	12,703	85	C. F. & I. Co.	Open hearth.	Colorado.
	100	75	C. F. & I. Co.	Open hearth.	Colorado.
Galveston, Harrisburg & San Antonio.....	8,505	90	A. R. A.	Open hearth.	Tennessee.
Georgia & Florida.....	4,200	70	A. S. C. E.	Bessemer.	Maryland.
Grand Rapids & Indiana	2,200	85	Pennsylvania.	Bessemer.	Cambria.
	22,000	80	A. S. C. E.	Bessemer.	Algoma.
Grand Trunk Pacific.....	40,000	80	A. S. C. E.	Open hearth.	Dominion.
	5,000	60	A. S. C. E.	Open hearth.	Dominion.
	6,750	80	A. S. C. E.	Bessemer.	Lackawanna.
Grand Trunk	30,000	100	A. S. C. E.	Open hearth.	Dominion.
	1,650	70	I. S. Co.	Bessemer.	Illinois.
Green Bay & Western.....	12,000	67	.....	Bessemer.	Lackawanna.
Gulf, Texas & Western.....	4,949	90	A. R. A.	Open hearth.	Tennessee.
Houston & Texas Central.....	15,000	90	A. R. A.—A.	Bessemer.	Illinois.
Illinois Central	20,000	90	A. R. A.—A.	Open hearth.	Tennessee.
	991	80	.....	Open hearth.	Dominion.
Intercolonial	3,000	80	I. S. Co.	Open hearth.	Illinois.
Iowa Central	2,000	85	I. S. Co.	Open hearth.	Illinois.
Kansas City Southern	193	60	.....	Bessemer.	Algoma.
Kingsdon & Pembroke.....	1,325	80	A. S. C. E.	Bessemer.	Lackawanna.
Lake Superior & Ishpeming.....	125	80	A. S. C. E.	Titanium.	Lackawanna.
	575	70	Pennsylvania.	Bessemer.	Pennsylvania.
	360	80	A. S. C. E.	Open hearth.	Pennsylvania.
Long Island	4,177	100	A. S. C. E.	Open hearth.	Pennsylvania.
	375	73	Gilder.	Open hearth.	Pennsylvania.
	5,600	150	Third rail.	.....	Cambria.
Louisville & Nashville.....	30,000	70 and 80	A. S. C. E.	Open hearth.	Tennessee.
Maine Central	6,000	85	A. S. C. E.	Bessemer.	Lackawanna.
Marshall & East Texas.....	2,200	85	A. S. C. E.	Bessemer.	Illinois.
Mexican Railway	7,000	85	B. S.	Bessemer.	Guest, Keen & Nettle-
					folds, Eng.
Mexico North-Western	7,000	70	A. S. C. E.	Bessemer.	U. S. Steel.
Minneapolis & St. Louis.....	4,260	80	I. S. Co.	Open hearth.	Illinois.
Mississippi Central	185	80	A. S. C. E.	Open hearth.	Steel Rail Supply Co.
	6,679	85	A. S. C. E.	Bessemer.	Illinois.
Missouri, Kansas & Texas.....	6,678	85	A. S. C. E.	Open hearth.	Illinois.
Mobile, Jackson & Kansas City.....	440	70	A. S. C. E.	Bessemer.	.....
Nashville, Chattanooga & St. Louis.....	12,571	80	A. S. C. E.	Open hearth.	Tennessee.
Nevada Northern	100	70	A. S. C. E.	Bessemer.	Colorado.
	15,100	100	Dudley.	Bessemer.	Lackawanna.
	35,000	80	Dudley.	Bessemer.	Lackawanna.
New York Central & Hudson River.....	2,000	70	Dudley.	Bessemer.	Lackawanna.
	2,142	100	Dudley.	Open hearth.	Bethlehem.
	10,000	100	Dudley.	Titanium.	Lackawanna.
	2,400	80	Dudley.	Titanium.	Lackawanna.
New York, Chicago & St. Louis.....	5,251	75	A. S. C. E.	Bessemer.	Illinois.
	95	100	N. Y., N. H. & H.	Bessemer.	.....
	8,630	100	N. Y., N. H. & H.	Open hearth.	Bethlehem and Penna.
New York, New Haven & Hartford.....	975	80	A. S. C. E.	Open hearth.	.....
	4,406	90	N. Y., N. H. & H.	Re-rolled.	McKenna.
	405	68	N. Y., N. H. & H.	Re-rolled.	McKenna.
	960	75	Lackawanna.	Open hearth.	Bethlehem.
New York, Ontario & Western.....	4,400	85	A. S. C. E.	Open hearth.	Bethlehem.
	200	85	A. S. C. E.	Nickel chrome.	Bethlehem.
Norfolk & Southern.....	1,650	70	A. S. C. E.	Open hearth.	Pennsylvania.
Norfolk & Western.....	32,000	85	A. S. C. E.	Open hearth.	.....
Ocean Shore	3,000	70	A. S. C. E.	Bessemer.	Colorado.
Oregon Short Line.....	27,574	90	A. R. A.—A.	Open hearth.	Colorado.
	1,584	75	A. S. C. E.	Bessemer.	Lackawanna.
Pere Marquette	1,500	75	A. S. C. E.	Bessemer.	Carnegie.
	12,000	100	A. R. A.—B.	Bessemer.	Carnegie.
Pittsburgh & Lake Erie.....	1,800	80	A. S. C. E.	Bessemer.	Carnegie.
Pittsburgh, Shawmut & Northern.....	1,600	85	A. S. C. E.	Bessemer.	Lackawanna.
Quebec Central	3,750	80	.....	Bessemer.	Cammell, Laird & Co.,
					Eng.
Rutland	1,500	80	Dudley.	Bessemer.	Lackawanna.
Salem, Falls City & Western.....	1,700	60	A. S. C. E.	Bessemer.	Illinois.
Southern Pacific of Mexico.....	27,000	65 and 75	A. S. C. E. & C. S.	Bessemer.	U. S. Steel
	1,147	80	A. S. C. E.	Bessemer.	Algoma.
Temiskaming & Northern Ontario.....	957	80	A. S. C. E.	Open hearth.	Algoma.
Tennessee Central	600	70	A. S. C. E.	Open hearth.	Illinois.
Texas & New Orleans	2,115	90	A. R. A.	Open hearth.	Tennessee.
Texas-Mexican	2,100	80	A. S. C. E.	Open hearth.	Colorado.
Texas South Eastern.....	500	60	A. S. C. E.	Bessemer.	Illinois.
Tioga Valley	556	45	.....	.....	Steel Rail Supply Co.
Toledo, Peoria & Western.....	500	70	A. S. C. E.	Bessemer.	Illinois.
	1,000	80	A. R. A.—A.	Bessemer.	Illinois.
Toledo, St. Louis & Western.....	311	80	A. S. C. E.	Titanium.	Lackawanna.
Trans-Continental	5,154	80	A. S. C. E.	Bessemer.*	Algoma.
	12,950	85	Pennsylvania.	Bessemer.	Illinois.
Vandalia	5,450	85	Pennsylvania.	Open hearth.	Illinois.
	2,627	..	.....	Bessemer.	Illinois.
Wabash	5,161	..	.....	Bessemer.	Lackawanna.
	2,615	..	.....	Bessemer.	Carnegie.
	2,574	..	.....	Titanium.	Lackawanna.

*20 per cent. may be open hearth.

MILEAGE OF RAILWAYS BLOCK SIGNALLED.

Our table this year shows a marked increase in total length of lines block signaled, and the improvement is still greater than appears from the statement of mere mileage, for in a number of cases automatic signals have been introduced in place of manual signals, shortening the block sections and increasing the capacity of the lines. By the wrongful inclusion of the Grand Trunk our table which was printed a year ago (page 1639), made the total of signaled lines too large; the comparison of the present figures should be made with those which we published May 14, 1909, page 1022, taken from the government bulletin. The increase in the 12 months is 3,775 miles, or more than 75 per cent. greater than the increase which was made in the hard-times year of 1908; and large sums have been expended for new automatic signals which do not increase the total mileage block signaled because the lines were worked by the space interval before—by the manual block system. The totals of the present table and that published last May compare as follows:

	Jan. 1, 1909.	Jan. 1, 1910.
Automatic signals, miles of road.....	12,191	14,419
Manual	47,358	49,905
Total	59,549	63,324

In the table a dagger indicates those companies which did not respond to our circular in time for this issue, and the mileage of which is repeated from the table published last May (page 1022).

The work planned for the coming year aggregates probably 3,000 miles of road, automatic, and over 1,000 non-automatic; but the automatics on the New York Central are to take the place of manual signals.

Following are notes of these proposed new installations, together with explanations of some of the changes from last year, and other notes:

Atchison, Topeka & Santa Fe.—The non-automatic block signal mileage on the Atchison system includes six sections on which the electric train staff is used. These aggregate 44

miles, of which 20 miles is on the steep grade between Jansen and Raton, N. M. The new work proposed during the present year by the Atchison includes automatic signals on double track lines as follows: Bucklin to Rothville, 13 miles; Cedar Point to Wagoner, 12 miles; Illinois river bridge, two miles; also automatic signals on the single track between Los Angeles and Garvanza, five miles; also manual signals on the middle division, 147 miles. The 20 new interlocking plants proposed for the coming year were noticed in the *Railroad Age Gazette* of December 17, p. 1220. The company also proposes to take out enclosed disk signals on 13 miles and put in their place electric motor semaphores.

Baltimore & Ohio Southwestern.—This company is to begin at once the erection of automatic block signals between Cincinnati and Loveland, 24 miles.

Baltimore & Sparrow's Point.—The manual block system will be extended two miles.

Buffalo, Rochester & Pittsburgh.—On this road the block signals are used ordinarily only for the protection of passenger trains.

Bessemer & Lake Erie.—The increase of nine miles in this road during the past year includes one section of 0.8 mile operated by the electric train staff.

Boston & Maine.—The mileage of automatic block signals on this road shows during the past year the very large increase of 207 miles; and during 1910 the company proposes to equip 475 miles of line (single-track) with automatic signals.

Chicago & Alton.—On this road there has been during the past year an increase of 249 miles in automatic block signals and a decrease of the same mileage in non-automatic. During the coming year the company proposes to put up new automatic block signals on the double-track between Bloomington and Atlanta, 19 miles, and between Iles and Nilwood, 27 miles.

Chicago, Burlington & Quincy.—This company proposes to introduce the controlled manual block system in place of the simple manual, on its line from Lincoln, Neb., to Denver, Colo., 482 miles (single-track).

LENGTH OF RAILWAYS WORKED BY THE BLOCK SYSTEM, JANUARY 1, 1910.

1	2			3			4			5			6			7			8			9			10			11		
Name of Railway.	Automatic block signals			Non-automatic block signals			Miles of road			Non-automatic block signals			Miles of road			Non-automatic block signals			Miles of road			Percentage Total operated under passenger lines block system.			Increase, mles.*					
	Single track.	Two or more tracks.	Total.	Single track.	Two or more tracks.	Total.	Single track.	Two or more tracks.	Total.	Single track.	Two or more tracks.	Total.	Single track.	Two or more tracks.	Total.	Total, both kinds.	Total, passenger operated.	under lines block system.	Percentage Total operated under passenger lines block system.	Increase, mles.*										
	Single track.	Two or more tracks.	Total.	Single track.	Two or more tracks.	Total.	Single track.	Two or more tracks.	Total.	Single track.	Two or more tracks.	Total.	Single track.	Two or more tracks.	Total.	Total, both kinds.	Total, passenger operated.	under lines block system.	Percentage Total operated under passenger lines block system.	Increase, mles.*										
Alabama Great Southern.—See Queen & Crescent.																														
Atchison, Topeka & Santa Fe, including Pacific Coast and Texas lines	63	60	123	985	453	1,438	1,561	8,307	..	2																				
Atlanta & West Point	..	..	..	..	6	6	6	225	..	2																		
Atlantic Coast Line	..	2	2	505	82	587	589	4,240	14	94																				
Baltimore & Ohio	13	166	179	590	712	1,302	1,481	3,241	46	421																				
Baltimore & Ohio Southwestern	..	..	..	9	51	60	60	981	6	..																		
Baltimore & Sparrow's Point	..	..	..	..	3	3	3	5	64	..																		
Bessemer & Lake Erie	..	..	..	91	104	195	195	188	100	9																		
Boston & Maine	4	539	543	..	5	5	548	2,239	24	179																				
Boston Elevated	..	11	11	..	..	..	11	11	100	..																		
Boston, Revere Beach & Lynn	..	14	14	..	..	..	14	14	100	..																		
Buffalo, Rochester & Pittsburgh	..	..	..	298	124	422	422	422	100	..																		
Butte, Anaconda & Pacific	8	..	8	..	..	..	8	26	30	..																		
Caldwell & Northern	..	..	..	2	..	2	2	23	10	..																		
Central of Georgia	..	..	..	52	12	64	64	1,915	4	4																		
Central of New Jersey	13	199	212	..	..	..	212	470	45	..																		
Central Vermont	..	..	..	2	..	2	2	403	..	..																		
Chesapeake & Ohio	..	48	48	1,209	256	1,465	1,513	1,446	100	..																				
Chicago & Alton	416	145	561	141	..	141	702	999	70	..																				
Chicago & Eastern Illinois	4	103	107	169	58	227	334	693	..	15																				
Chicago & Northwestern	..	735	735	2,154	116	2,270	3,005	7,724	39	..																				
Chicago & Western Indiana	..	18	18	..	9	9	27	27	100	..																				
Chicago, Burlington & Quincy	..	28	28	8,152	525	8,677	8,705	8,705	100	..																				
Chicago Great Western	..	16	16	264	27	291	307	1,474	21	8																				
Chicago, Indiana & Southern.—See N. Y. C.																														
Chicago, Milwaukee & St. Paul	6	43	49	3,487	385	3,872	3,921	6,550	60	..																				
Chicago, Milwaukee & Puget Sound (see note)	..	..	..	1,254	..	1,254	1,254	1,254	100	..																		
†Montana	..	..	..	93	..	93	93	153	61	..																		
†Chicago, Peoria & St. Louis	1	..	1	..	..	..	1	235	..	..																		
Chicago, Rock Island & Pacific	406	280	686	912	..	912	1,598	7,941	20	915																				
Chicago, St. Paul, Minneapolis & Omaha	..	6	6	592	64	656	662	1,487	44	..																				
Chicago Terminal Transfer	..	5	5	..	..	..	5	46	12	..																		
Cincinnati & Muskingum Valley	..	..	..	11	..	11	11	148	8	..																		
Cincinnati, Hamilton & Dayton	..	8	8	73	20	93	101	907	..	..																		
Cincinnati, N. O. & T. P.—See Queen & Crescent Route.																														
Cleveland, Akron & Columbus	..	..	..	126	16	142	142	178	80	..																		
Colorado Midland (reports "none")	..	..	..	..	..	..	..	..	..	..										

*Increase over mileage reported to the Interstate Commerce Commission one year ago (*Railroad Age Gazette*, May 14, 1909).

†Figures taken from Government report of last year. Corrected figures not received.

‡Fraction of .5 or more called 1 mile; less than .5 ignored.

LENGTH OF RAILWAYS WORKED BY THE BLOCK SYSTEM, JANUARY 1, 1910.—Continued.

1 Name of Railway.	2 Automatic block signals			3 Non-automatic block signals			8 Total, both kinds.	9 Total passenger lines operated.	10 Percentage operated under block system.	11 Increase, miles.*
	4 Miles of road			5 Miles of road						
	Single track.	Two or more tracks.	Total.	Single track.	Two or more tracks.	Total.				
†Cornwall & Lebanon .....	...	...	...	8	14	22	22	22	100	..
Cumberland & Pennsylvania .....	...	...	...	4	3	7	7	31	23	..
Cumberland Valley .....	...	7	7	19	...	19	26	162	16	..
Davenport, Rock Island & Northwestern .....	...	...	...	41	1	42	42	42	100	..
Delaware & Hudson	164	241	405	1	...	1	406	744	55	..
Delaware, Lackawanna & Western	52	480	532	6	...	6	538	922	58	51
Duluth & Iron Range .....	...	...	...	14	2	16	16	168	10	..
Duluth, South Shore & Atlantic .....	...	...	...	4	...	4	4	593	...	..
Durham & Southern .....	...	...	...	56	...	56	56	56	100	..
Erie .....	...	100	100	923	620	1,543	1,643	2,068	70	..
Galveston, Harrisburg & San Antonio.—See So. Pacific.	...	...	...	...	...	...	...	...	...	..
Grand Rapids & Indiana .....	...	...	...	2	...	2	2	537	...	..
Grand Trunk System (St. Clair Tunnel)	1	2	3	...	...	...	3	...	...	..
Great Northern	8	62	70	260	...	260	330	6,529*	...	..
Hocking Valley .....	...	...	...	75	...	75	75	337	22	..
Hudson & Manhattan .....	...	6	6	...	...	...	6	6	100	..
Illinois Central	31	246	277	...	5	5	282	4,273	7	..
Yazoo & Mississippi Valley	7	...	...	...	...	...	7	1,192	...	..
Iowa Central (reports "none") .....	...	...	...	...	...	...	...	...	...	..
†Kansas City, Clinton & Springfield	8	...	8	...	...	...	8	155	5	..
Kentucky & Indiana Bridge & Railroad Co. ....	...	...	...	7	3	10	10	10	100	..
Lackawanna & Wyoming Valley .....	...	...	...	1	2	3	3	23	15	..
Lake Shore & Michigan Southern.—See New York Central.	...	...	...	...	...	...	...	...	...	..
Lehigh Valley	14	467	481	675	61	736	1,217	1,181	100	..
Long Island	4	93	97	...	23	23	120	392	31	..
†Louisville & Nashville	25	10	35	91	44	135	170	3,775	4	..
Maine Central	276	45	321	...	...	...	321	903	36	130
Marquette & Southern .....	...	...	...	4	...	4	4	51	7	..
Michigan Central.—See New York Central.	...	...	...	...	...	...	...	...	...	..
Minneapolis, St. Paul & Sault Ste. Marie .....	...	...	...	1,992	...	1,992	1,992	1,992	100	..
Wisconsin Central .....	...	...	...	...	4	4	4	...	...	..
Missouri, Kansas & Texas .....	...	...	...	...	...	...	...	...	...	..
Missouri Pacific	44	17	61	27	7	34	95	3,864	3	7
St. Louis, Iron Mountain & Southern	84	9	93	7	1	8	101	2,577	5	..
Mobile & Ohio .....	...	5	5	42	...	42	47	825	6	..
†Monongahela (less than 1 mile) .....	...	...	...	...	...	...	...	...	...	..
Monongahela Connecting .....	...	...	...	...	4	4	4	55	8	..
Morgan's Louisiana & Texas.—See Southern Pacific.	...	...	...	...	...	...	...	...	...	..
Nashville, Chattanooga & St. Louis .....	...	...	...	93	5	98	98	...	...	3
†Newburgh & South Shore .....	...	...	...	3	2	5	5	...	...	..
New York & Long Branch .....	...	38	38	...	...	...	38	38	100	..
New York Central & Hudson River .....	...	236	236	1,712	884	2,596	2,832	2,844	...	..
Boston & Albany .....	...	182	182	...	25	25	207	380	55	..
New York Central Lines (West):	...	...	...	...	...	...	...	...	...	..
Chicago, Indiana & Southern .....	...	2	2	17	...	17	19	303	6	..
Cleveland, Cincinnati, Chicago & St. Louis .....	...	...	...	549	318	867	867	1,763	49	..
Lake Erie & Western .....	...	...	...	873	9	882	882	832	100	863
Lake Shore & Michigan Southern	7	513	520	1,038	17	1,055	1,575	1,451	100	64
Dunkirk, Allegheny & Pittsburgh .....	...	...	...	90	...	90	90	90	100	..
Lake Erie, Alliance & Wheeling .....	...	...	...	88	...	88	88	88	100	..
Michigan Central .....	...	272	272	901	19	920	1,192	1,192	100	..
Peoria & Eastern .....	...	...	...	3	2	5	5	338	1	..
Pittsburgh & Lake Erie .....	...	149	149	20	3	23	172	191	87	..
New York, New Haven & Hartford	20	236	256	258	284	542	798	1,968	41	..
New York, Ontario & Western	36	110	146	...	...	...	146	493	30	9
Norfolk & Western	4	134	138	1,345	162	1,507	1,645	1,719	95	..
Northern Pacific	2	58	60	1,016	223	1,239	1,299	4,732	27	..
Northwestern Pacific	1	9	10	...	...	...	10	327	3	..
†Ohio Valley Electric .....	...	...	...	16	...	16	16	30	53	..
Oregon Railroad & Navigation Co.—See Union Pacific.	...	...	...	...	...	...	...	...	...	..
Pennsylvania .....	...	246	246	1,271	960	2,231	2,477	3,296	75	20
Northern Central .....	...	...	...	288	146	434	434	439	99	..
Philadelphia, Baltimore & Washington .....	...	36	36	108	179	287	323	638	50	..
West Jersey & Sea Shore .....	...	94	94	46	34	80	174	291	60	..
Pennsylvania (West):	...	...	...	...	...	...	...	...	...	..
Pennsylvania Company .....	...	241	241	200	428	628	869	1,312	66	..
Pittsburgh, Cincinnati, Chicago & St. Louis .....	...	9	9	611	492	1,103	1,112	1,417	78	9
Peoria & Pekin Union .....	...	...	...	...	6	6	6	15	39	..
Pere Marquette	13	...	13	19	...	19	32	1,537	2	..
Philadelphia & Reading, including Atlantic City and other controlled lines	21	442	463	255	122	377	840	1,181	71	..
Philadelphia Rapid Transit Co. ....	...	7	7	...	...	...	7	7	100	..
Pittsburgh & Lake Erie.—See New York Central.	...	...	...	...	...	...	...	...	...	..
Queen & Crescent Route:	...	...	...	...	...	...	...	...	...	..
Alabama Great Southern	92	...	92	...	...	...	92	291	31	..
Cincinnati, New Orleans & Texas Pacific	266	69	335	1	...	1	336	336	100	..
Richmond, Fredericksburg & Potomac .....	...	...	...	10	78	88	88	88	100	..
St. Joseph & Grand Island (less than 1 mile) .....	...	...	...	...	...	...	...	...	...	..
St. Louis & San Francisco	208	37	245	183	...	183	428	4,727	9	..
St. Louis Merchants' Bridge Terminal.—See T. R. R. Assn.	...	...	...	...	...	...	...	...	...	..
St. Louis Southwestern (less than 1 mile) .....	...	...	...	...	...	...	...	...	...	..
San Pedro, Los Angeles & Salt Lake	1	...	1	...	...	...	1	1,066	...	..
Seaboard Air Line .....	...	...	...	214	...	214	214	2,437	9	..
Southern .....	...	3	3	1,595	240	1,835	1,838	6,648	28	168
†Southern Illinois & Missouri Bridge .....	...	5	5	...	...	...	5	5	100	..
Southern Pacific, Atlantic System:	...	...	...	...	...	...	...	...	...	..
Galveston, Harrisburg & San Antonio	215	...	215	...	...	...	215	1,271	17	125
Louisiana Western	104	...	104	...	...	...	104	140	74	..
Morgan's Louisiana & Texas	95	...	95	...	...	...	95	242	39	..
Texas & New Orleans	110	...	110	...	...	...	110	438	25	..
Southern Pacific, Pacific System	1,923	135	2,058	95	...	95	2,153	6,340	34	160
Staten Island .....	...	...	...	...	...	...	...	13	...	..
Staten Island Rapid Transit .....	...	10	10	...	...	...	10	10	100	..
Terminal Railroad Association of St. Louis .....	...	12	12	...	2	2	14	22	64	..
Ulster & Delaware	24	...	24	...	...	...	24	129	19	..
Union .....	...	1	1	1	1	2	3	7	...	..
Union Pacific (see note)	857	461	1,318	11	...	11	1,318	3,416	...	..
Oregon Railroad & Navigation Co.	418	...	418	...	...	...	418	1,327	31	..
Oregon Short Line	367	7	374	...	...	...	374	1,457	26	40
†Vandalia .....	...	...	...	202	36	238	238	828	30	..
Virginian .....	...	...	...	2	...	2	2	359	...	..
Wabash .....	...	7	7	1,727	94	1,821	1,828	2,009	91	..
Wabash Pittsburgh Terminal .....	...	4	4	...	...	...	4	64	6	..
†Washington Southern .....	...	...	...	32	...	32	32	100	...	..
Washington Terminal .....	...	2	2	...	...	...	2	2	100	..
Wisconsin Central.—See M., St. P. & S. S. M.	...	...	...	...	...	...	...	...	...	..
Total	6,436	7,983	14,419	40,323	8,593	48,916	63,324	158,938	...	..

Chicago, Milwaukee & Puget Sound.—No report received. As the whole road was worked by the block system last year we have assumed that the same is true this year.

Chicago & North Western.—Automatic mileage increased 129 miles, non automatic decreased 245 miles.

Chicago, Rock Island & Pacific.—The increase in automatic block signals has been 422 miles, and in non-automatic 493 miles, a total increase of 915 miles, largely single-track. The manual block signal mileage reported includes nine miles worked by the electric train staff and nine miles of simple manual block system worked by telephone. All of the automatic block signals put up during the past year are three-position upper quadrant.

Chicago Terminal Transfer.—Proposed increase, six miles double track, automatic.

Cincinnati, Hamilton & Dayton.—This road reports automatic signals for the first time. It is proposed, during the coming year, to erect automatic block signals on 22 miles of single-track and seven miles of double-track.

Delaware, Lackawanna & Western.—The increase in non-automatic block signaling on this road includes 4.3 miles on the Bangor & Portland division, where the electric train staff is used. The train staff stations have no attendants, the staff being taken out by the trainmen after consultation by telephone with the train despatcher. The new signaling proposed by this road for the coming year aggregates 83 miles, as follows: Single-track automatic, Chenango Forks to Cortland, 32 miles single-track; Waterville to Utica, 20.5 miles, automatic, and on third track, Scranton to Pocono, 30.2 miles. Electric motor signals will be used for all of these installations.

Great Northern.—The statement of length of road operated, 6,529 miles, is unofficial.

Grand Rapids & Indiana.—This company uses the block system, on the mileage shown, only during the months of July, August and September. During the coming year it is proposed to establish the non-automatic block system between Fort Wayne Junction, Ind., and Sturgis, Mich., 56 miles.

Grand Trunk.—From the report issued by the Interstate Commerce Commission, showing mileage January 1, 1909, it appears that except for the three miles now shown the statements heretofore sent out by this company are erroneous, the term "block signal" having been interpreted on this road so loosely as to include something that does not embrace the space interval principle.

Lehigh Valley.—Automatic block signals to be installed during the coming year on the Perth Amboy branch, nine miles, double-track.

Maine Central.—The increase during the past year in automatic block signals has been 130 miles; expected increase in 1910 approximately 150 miles.

Missouri, Kansas & Texas.—This road has block signals only in half mile sections at four principal points.

Missouri Pacific.—On the Iron Mountain it is proposed in 1910 to install automatic signals from Hogan to Piedmont, Mo., 29.5 miles.

Nashville, Chattanooga & St. Louis.—It is proposed to install controlled manual and automatic signals combined, between Cowan and Sherwood, 9.1 miles, with a view to running trains wholly by the block signals and without written train orders. Plans are under consideration for the installation either of this system or automatic signals alone on 30 miles of line near Nashville.

New York Central Lines.—On the New York Central & Hudson River during the past year the manual block system, part controlled and part simple, has been abandoned on 61 miles and automatic signals put in its place. The automatic signals are three-position upper quadrant. On another length of 60 miles three-position upper-quadrant signals were put up in place of two-position lower quadrant. During the coming year the manual block system is to be installed on 177 miles

of the Chicago, Indiana & Southern. On the Cleveland, Cincinnati, Chicago & St. Louis automatic block signals will be installed in place of the manual system on 262 miles. On the New York Central & Hudson River automatic signals will be installed in place of the manual block system, much of it controlled manual, on 215 miles. On the Harlem division, between Mount Vernon and White Plains, where the line is being electrified, alternating-current automatic block signals will be installed in place of the automatic block signals now in use on that section of the road.

On the Michigan Central the telegraph block system is used for the protection of passenger trains only.

New York, Ontario & Western.—This company expects during 1910 to erect automatic electric-motor block signals between Luzon, N. Y., and Liberty, six miles, and clock-work disk signals between Carbondale, Pa., and Pleasant Mount, 11.2 miles.

Northern Pacific.—The increase of 40 miles in the automatic block signal mileage of this company represents the substitution of automatic for manual signals on the line, double-track, between Seattle and Tacoma. The non-automatic block-signal mileage on this road includes 116 miles more worked by the A B C system than last year, that system having been introduced between Billings, Mont., and Livingston.

Norfolk & Western.—There was an increase during the past year of 71 miles automatic, but a net decrease in the total, the manual block system having been abandoned on a considerable mileage.

Pennsylvania.—The mileage statement of this road was made up September 30, but we understand that no important changes have been made since that date. As to new work, this company advises that the introduction of the block system on all of the passenger lines of the company is in immediate contemplation. Notes on seven important interlockings now in course of construction, and on eight others, which it is proposed to install in the near future, are given in the news columns of this issue.

Philadelphia & Reading.—The automatic mileage on this line includes 16 miles of line on which no passenger trains are run.

Queen & Crescent.—On the Alabama Great Southern during the past year the increase has been 18 miles. On the C., N. O. & T. P. three electric interlocking plants are to be put in during the coming year, one of 14 levers, at Cincinnati and two, of 44 levers and 36 respectively, at Chattanooga.

St. Louis & San Francisco.—The statement of total miles of passenger lines operated is estimated. Increase in automatic during the past year 204; decrease in manual, 208 miles. It is proposed during the coming year to install automatic block signals on 495 miles of road, namely:

Arcadia to Nichols	78.1
Southern Junction to Thayer.....	136.8
Amory to Jasper	82.6
Aurora to Monett	13.0
Eastern Junction to Newburg.....	117.8
Newburg to St. Clair	66.9
Total	495.2

Southern.—This company is to install a 24-lever mechanical interlocking at Austell, Ga. The plant will have power distant signals. This company has decided that all new semaphore signals hereafter erected shall be of the upper-quadrant type.

Southern Pacific, Pacific System.—Increase of automatic mileage, 160 miles. Six new mechanical interlocking plants are to be erected during the coming year and six all-electric. This proposed new work has been noted already in the *Railroad Age Gazette*. It is proposed, during the coming year, to install automatic signals on 440 miles of line.

Southern Pacific, Atlantic System.—Increase in automatic mileage during the past year on the Galveston, H. & S. A., 125 miles. It is proposed during 1910 to install automatic

block signals on this line between Del Rio and Langtry, 64.7 miles.

Union Pacific.—On this road the total block signal mileage is the same as the total automatic mileage, the entry of 11 miles, non-automatic, representing a section of road where the electric train staff system is used, while at the same time the road is equipped with automatic block signals. During the coming year it is proposed to install automatic block signals from Topeka, Kan., to Salina, 117.4 miles and from Sand Creek, Colo., to La Salle, 45.3 miles. On 208.8 miles of line heretofore single-track a second main track is being built and the automatic signals will be rearranged for double-track working. The seven electric and 12 mechanical interlocking plants proposed for the coming year were noticed in our issue of December 17.

On the Oregon Short Line during the past year the increase in automatic block signal mileage has been 40 miles. During the coming year it is expected that 299 miles of line will be equipped with automatic signals; and of this 19 miles is double-track.

On the Oregon Railroad & Navigation Company's lines during the coming year 18 miles, single-track, will be equipped with automatic block signals, and a considerable mileage, which now has non-continuous automatic signals, will be made continuous by the erection of new signals.

CARS AND LOCOMOTIVES ORDERED IN 1909.

The following tables show the new freight cars, passenger cars and locomotives ordered by American railways in 1909. The collection of this data involves a large amount of time and labor, and the compilation is necessarily subject to some slight omissions, but it is sufficiently accurate to meet the general purpose for which these statistics have been prepared. Practically all the data is derived from official sources, but in a few instances where no replies have been made to inquiries, figures from our regular weekly records have been used. Attention is called to the fact that these statistics refer to cars and locomotives *ordered* during the year; statistics of equipment *built* during the year are given elsewhere in this issue.

The orders received have been far larger than last year and compare very favorably with the average orders placed during the nine years since this record has been kept. The car and locomotive shops have sufficient orders now to keep them running for some time. The totals show that during the year there were ordered 189,360 freight cars, 4,514 passenger cars and 3,350 locomotives. Of the freight cars 74,820 are all steel and 77,532 have steel underframes. Of the passenger cars 1,635 are all steel and 943 have steel underframes. Of the locomotives 238 are compound and 163 are Mallets. The totals for the last nine years are as follows:

Cars				Locomotives			
Year.	Locomo- tives.	Passen- ger.	Freight.	Year.	Locomo- tives.	Passen- ger.	Freight.
1901...	4,340	2,879	193,439	1906...	5,642	3,402	310,315
1902...	4,665	3,459	195,248	1907...	3,482	1,791	151,711
1903...	3,283	2,310	108,936	1908...	1,182	1,319	62,669
1904...	2,538	2,213	136,561	1909...	3,350	4,514	189,360
1905...	6,265	3,289	341,315				

FREIGHT CARS ORDERED IN 1909.

Purchaser.	No.	Kind.	Capacity.	Builder.
Ala. Great Southern...	*250	Gndola.	100,000	Standard Steel.
	*375	Gndola.	100,000	Standard Steel.
	*200	Flat	100,000	Pressed Steel.
Alabama Gt. Southern.	55	Bx. bds.	60,000	Mt. Vernon Car.
	7	Gondola	80,000	Mt. Vernon Car.
	15	Coke	60,000	Mt. Vernon Car.
	1	Flat	80,000	Mt. Vernon Car.
Alabama & Vicksburg..	35	Box	60,000	West. Steel C. & F.
	17	Box	60,000	American C. & F.
	4	Coal	80,000	American C. & F.
	1	Caboose	.....	Company shops.
Allquippa & So. R.R....	*25	Gndola.	200,000	American C. & F.
	*5	Flat	200,000	American C. & F.
	*6	Box	80,000	American C. & F.
Am. Smelters Sec. Co..	*100	Ore	120,000	Ingoldsby Auto. Car Co.
	*30	Flat	100,000	Middletown Car Co.
Anglo N'd Dev. Co....	27	Box	.....	Silliker Car Co.
	28	Flat	.....	Silliker Car Co.

*Asterisk indicates steel cars.

† Indicates steel underframe cars.

Ann Arbor.....	*500	Coal	100,000	Standard Steel.
	†300	Box	80,000	Standard Steel.
Ark., Okla. & Westn...	15	Box	60,000	Hicks Loco. & Car.
Armour Car Line.....	400	Refrig.	60,000	Company shops.
A., T. & S. F.....	†500	Auto	8,000	Am. Car & Fdy.
	†1,050	Refrig.	60,000	Am. Car & Fdy.
	†33	Caboose	.....	Am. Car & Fdy.
	*500	Tank	80,000	Am. Car & Fdy.
	†500	Au. Frn	80,000	Am. Car & Fdy.
	†500	Auto	80,000	Am. Car & Fdy.
	†5,000	Box	80,000	Am. Car & Fdy.
	†500	Flat	80,000	Am. Car & Fdy.
	†35	Caboose	.....	Company shops.
	†1,000	Ballast	100,000	Nat'l Dump Car Co.
	†1,000	Dpg stk	80,000	Nat'l Dump Car Co.
Atl., Birm. & Atl.....	25	Stock	60,000	Am. Car & Fdy.
Atlantic Coast Line...	†500	Vnt. bx.	60,000	Barney & Smith.
	†25	Hopper	80,000	Pressed Steel.
	*50	Hrt Con	100,000	Rodger Ballast Car Co.
	*1,200	Box	60,000	Barney & Smith.
	†240	Box	60,000	So. Balt. Steel Car & F.
Alt. & St. Andrews Bay	10	Box	60,000	Hicks Loco. & Car.
Atlas Car Company...	*10	Tank	60,000	Chicago Steel Co.
Augusta Southern	5	Flat	50,000	Georgia Car.
Baltimore & Ohio.....	†1,000	Gondola	100,000	Standard Steel.
	*620	Hopper	100,000	Standard Steel.
	†1,000	Coke	80,000	Standard Steel.
	†1,000	Box	80,000	Standard Steel.
	*2,400	Hopper	100,000	Standard Steel.
	*1,000	Coke	100,000	Cambria Steel.
	*1,000	Hopper	100,000	Cambria Steel.
	†500	Vnt. bx.	80,000	Ralston Steel.
	500	Refrig.	70,000	Whipple Car.
	†1,000	Box	80,000	Am. Car & Fdy.
	93	Caboose	.....	Company shops.
Bellingham Bay & B. C.	10	Flat	70,000	Company shops.
Berwind-White C.M. Co.	*300	Coal	100,000	Cambria Steel.
Bird's Hill Sand Co...	*18	O. dmp	100,000	Hart-Otis Car Co.
Birmingham Southern..	*80	Coke	100,000	Pressed Steel.
	*20	Hopper	100,000	Pressed Steel.
	†10	Box	100,000	Pressed Steel.
Borough Dev. Co.....	15	Gondola	90,000	Mt. Vernon Car.
Boston & Maine.....	*900	Coal	80,000	Laconia Car Co.
	†1,000	Box	80,000	Laconia Car Co.
	†200	Ice	60,000	Laconia Car Co.
	†32	Caboose	.....	Laconia Car Co.
Boyne City, G. & Alpena	20	Logging	60,000	Russell Wheel & Fdy.
Brooks Scanlon Lbr. Co.	10	Flat	60,000	Ryan Car Co.
	.....	Tank	80,000	Chicago Steel Car.
Buff., Roch. & Pitts...	†500	Box	80,000	Am. Car & Fdy.
	†500	Box	80,000	Standard Steel.
	*1,000	Hopper	100,000	Cambria Steel.
Buff. Un. Furnace Co..	*25	Hopper	100,000	Pressed Steel.
Butler Co. R.R.....	2	Box	80,000	Company shops.
Cal. Westn Ry. & Nav.	20	Flat	50,000	W. L. Holman Co.
Canadian Northern.....	27	Refrig.	60,000	Crossen Car.
	100	Flat	60,000	Crossen Car.
	150	Box	60,000	Crossen Car.
	15	Caboose	40,000	Crossen Car.
	1,000	Box	60,000	Rhodes Curry.
	10	Caboose	40,000	Rhodes Curry.
	750	Box	60,000	Canada Car.
	†100	Flat	60,000	Dominion Car & Fdy.
	100	Box	60,000	Silliker Car.
Canadian Nor. Ont.....	50	Box	60,000	Crossen Car.
	2	Caboose	40,000	Rhodes Curry.
	*100	Ore	100,000	Dominion Car & Fdy.
Canadian Nor. Quebec..	3	Caboose	40,000	Rhodes Curry.
Canadian Pacific	*502	Coal	100,000	Dominion Car & Fdy.
	998	Box	60,000	Company shops.
	531	Stock	60,000	Company shops.
	70	Vans	.....	Company shops.
	4	Stf. sup.	.....	Company shops.
	*2	Horse	.....	Company shops.
	*3	Ballast	100,000	Dominion Car & Fdy.
	2	Bx. bag	.....	Company shops.
	11	Refrig.	80,000	Company shops.
	15	Flat	60,000	Company shops.
	*125	Flat	80,000	Dominion Car & Fdy.
	*1,000	Box	80,000	Dominion Car & Fdy.
	10	Vans	.....	Company shops.
Caro., Clinchfld & Ohio.	*750	Hopper	100,000	Pressed Steel.
	*250	Gondola	100,000	Pressed Steel.
Cent. Cal. Tr. Co.....	4	Flat	50,000	W. L. Holman Co.
Central New England.	4	Milk	.....	.....
Central Pacific	†800	Box	100,000	Am. Car & Fdy.
	†120	Ballast	100,000	Rodger-Ballast Car Co.
	†200	Flat	100,000	Pressed Steel.
	80	bodies	100,000	Pressed Steel.
	*100	Gondola	100,000	Pressed Steel.
	5	Caboose	.....	Standard Steel.
Cent. of New Jersey...	†1,000	Gondola	100,000	Am. Car & Fdy.
	*1,000	Hopper	100,000	Standard Steel.
	†200	Refrig.	60,000	Standard Steel.
	†50	Flat	80,000	Standard Steel.
Charlotte Har. & Nor..	†25	Flat	60,000	Barney & Smith.
	†25	Vnt. bx.	60,000	Barney & Smith.
Chesapeake & Ohio....	*1,500	Hopper	100,000	Standard Steel.
	82	Box	80,000	Am. Car & Fdy.
	41	Stock	80,000	Am. Car & Fdy.
	26	Flat	80,000	Am. Car & Fdy.
	32	Coke	60,000	Am. Car & Fdy.
	*6	Gondola	100,000	Am. Car & Fdy.
	*1,000	Hopper	100,000	Pressed Steel.
	*1,000	Hopper	100,000	Am. Car & Fdy.
Chic. & Nor. Westrn...	†1,000	Box	80,000	Am. Car & Fdy.
	†500	Gondola	100,000	Am. Car & Fdy.
	*500	Ore	100,000	Am. Car & Fdy.
	†1,500	Gondola	100,000	Am. Car & Fdy.
	†300	Flat	100,000	Am. Car & Fdy.
	300	Stock	60,000	Haskell & Barker.
	500	Box	80,000	Haskell & Barker.
	500	Auto	80,000	Haskell & Barker.

*Asterisk indicates steel cars.

† Indicates steel underframe cars.

Mo., Okla. & Gulf	50	Box ...	80,000	Barney & Smith.
Missouri Pacific.....	20	Gondola	60,000	Hicks Loco. & Car.
Mob., Jackson & Tenn.	†58	Hrt con.	100,000	Rodger-Ballast Car.
Monongahela Con. Ry..	4	Stock...	60,000	Company shops.
	12	Coke...	60,000	Company shops.
Mont., Wyo. & So.....	1	Gondola	50,000	Company shops.
Montreal Street Ry....	57	Box ...	80,000	Mt. Vernon Car.
Morris & Co. Ref. Line.	*25	Dump...	30,000	Dominion Car & Fdy.
M. T. E. Co.....	*53	Tank ...	80,000	Chicago Steel Car.
Munising Ry.	1	Tank ...	.....	Rhodes Curry.
	*50	Flat....	80,000	Western Steel C. & F.
Nash., Chat. & St. L..	1	Caboose	.....	Company shops.
	†100	Box ...	80,000	Am. Car & Fdy.
	†100	Hopper	100,000	Am. Car & Fdy.
Natchez, Col. & Mobile.	10	Flat....	60,000	Am. Car & Fdy.
National Car Line Co..	109	Beef...	60,000	Company shops.
Nevada Northern	*100	Ore....	120,000	Pullman.
New Orleans & N. E..	51	Box ...	60,000	Western Steel C. & F.
	70	Flat....	60,000	Western Steel C. & F.
	29	Box ...	60,000	Am. Car & Fdy.
	88	Coal...	80,000	Am. Car & Fdy.
	10	Box ...	60,000	Miss. Central.
	3	Caboose	.....	Company shops.
	3	Coal...	80,000	Company shops.
	†100	Flat....	100,000	Western Steel C. & F.
N. Y. Cent. & Hud. R..	*1,000	Coal...	100,000	Standard Steel.
	200	Stock...	60,000	Haskell & Barker.
	150	Flat....	.....	Company shops.
	†1,000	Auto...	80,000	Merchants Des. Tr. Co.
	†1,000	Coal...	100,000	Am. Car & Fdy.
	†1,000	Box ...	80,000	Am. Car & Fdy.
	*100	Gondola	100,000	Pressed Steel.
	12	Caboose	.....	Company shops.
	40	Caboose	.....	Merchants Des. Tr. Co.
	†500	Produce	60,000	Merchants Des. Tr. Co.
	100	Stock...	60,000	Merchants Des. Tr. Co.
	†1,000	Box ...	80,000	Merchants Des. Tr. Co.
	*500	Gondola	100,000	Pressed Steel.
	†1,000	Auto...	80,000	Am. Car & Fdy.
	†1,000	Box ...	80,000	Am. Car & Fdy.
	*1,000	Coal...	100,000	Pressed Steel.
	*400	Flat....	100,000	Am. Car & Fdy.
	200	.....	60,000	Merchants Des. Tr. Co.
N. Y., N. H. & Hart...	†1,600	Box ...	60,000	Keith C. & M. Mfg. Co.
	10	Milk...	.....	Company shops.
N. Y., O. & Westn....	†500	Gondola	80,000	Company shops.
Norfolk & Southern ...	200	Flat....	60,000	Fitzhugh Luther.
	500	Box ...	60,000	Fitzhugh Luther.
Norfolk & Western ...	†500	Stock...	80,000	Am. Car & Fdy.
	*500	Hopper	100,000	Barney & Smith.
	†500	Box ...	80,000	Barney & Smith.
	*2,000	Hopper	100,000	Barney & Smith.
	*600	Gondola	100,000	Barney & Smith.
North Coast	15	Flat....	80,000	Seattle Car.
	†50	Flat....	80,000	Bettendorf Axle Co.
	2	Caboose	50,000	Seattle Car.
Northern Central	*331	Hopper	100,000	Am. Car & Fdy.
	†65	Box ...	100,000	Company shops.
	†4	Cabin...	.....	Company shops.
	*122	Hopper	100,000	Standard Steel.
	†75	Box ...	100,000	Company shops
	†360	Gondola	100,000	Pressed Steel.
Northern Pacific	1,000	Box ...	80,000	Pullman.
	200	Box ...	80,000	Seattle Car.
	800	Box ...	80,000	Pullman.
	450	Box ...	80,000	So. Tacoma Co. shops.
	250	Auto...	80,000	Company shops.
	100	Caboose	.....	Company shops.
	800	Flat....	70,000	Company shops.
	200	Refrig.	50,000	Am. Car & Fdy.
	*500	Coal...	100,000	Pressed Steel.
	†400	Hrt con.	100,000	Rodger-Ballast Car Co.
	50	Flat....	70,000	Company shops.
	10	Transfr.	.....	Company shops.
Ohio Electric	2	Box ...	60,000	Cincinnati Car.
Ore. R. R. & Nav....	14	Expr's.	60,000	Cincinnati Car.
Ore. Short Line.....	6	Caboose	.....	Standard Steel.
	†500	Box ...	100,000	Am. Car & Fdy.
	5	Caboose	.....	Standard Steel.
Pac. Coast Coal M. Ltd.	30	Dump...	80,000	Hart-Otis.
Pacific Electric	50	Gondola	60,000	Hicks Loco. & Car.
	52	Box ...	80,000	Mt. Vernon Car.
Pacific Fruit Exp....	1,521	Refrig.	60,000	Pullman.
Penn. Lines West....	*1,000	Coke...	100,000	Cambria Steel.
	†500	Stock...	.....	Pressed Steel.
	†600	Gondola	100,000	Am. Car & Fdy.
	†100	Flat....	100,000	Standard Steel.
	*2,000	Coke...	100,000	Standard Steel.
	*1,200	Coke...	100,000	Cambria Steel.
	*2,500	Coke...	100,000	Pressed Steel.
	*1,500	Gondola	100,000	Pressed Steel.
	*500	Box ...	100,000	Pressed Steel.
	*500	Box ...	100,000	Ralston Steel.
Pacific Lumber Co....	15	Flat....	50,000	W. L. Holman Co.
	50	Flat....	80,000	W. L. Holman Co.
Penn. R.R.	*200	Hopper	100,000	Middletown Car.
	†1,214	Hopper	110,000	Cambria Steel.
	*669	Hopper	100,000	Am. Car & Fdy.
	†300	Auto...	100,000	Company shops.
	†789	Box ...	100,000	Company shops.
	†15	Refrig.	90,000	Company shops.
	†32	Gondola	100,000	Company shops.
	†48	Cabin...	.....	Company shops.
	†5	Cabin...	.....	Company shops.
	*1	Coke...	100,000	Company shops.
	*350	Coke...	105,000	Pressed Steel.
	†26	Box ...	100,000	Pressed Steel.
	*228	Hopper	100,000	Standard Steel.
	*250	Box ...	100,000	Pressed Steel.
	*350	Hopper	100,000	Pressed Steel.
	*150	Coke...	105,000	Pressed Steel.
	†500	Box ...	100,000	Am. Car & Fdy.
	*500	Coke...	105,000	Cambria Steel.

Penn. R.R.....	*478	Hopper	100,000	Standard Steel.
	*1,000	Hopper	110,000	Standard Steel.
	*3,500	Hopper	110,000	Pressed Steel.
	*500	Flat....	100,000	Pressed Steel.
	†640	Gondola	100,000	Pressed Steel.
	†1,033	Box ...	100,000	Company shops.
	†300	Auto...	100,000	Company shops.
Penn. Steel Co.....	20	Ore....	.....	Summers Steel Car. Co.
Pen., Ala. & Tenn....	20	Flat....	50,000	Company shops.
Peninsular Ry.	†10	Flat....	80,000	Seattle Car.
Pere Marquette	50	Box ...	80,000	Pullman.
Peters S. & L. Co., R.G.	*20	Gondola	100,000	Chicago Steel Co.
Phila. & Reading.....	*500	.....	.....	Standard Steel.
	1,000	Coal...	110,000	Am. Car & Fdy.
	1,000	Coal...	110,000	Standard Steel.
	†1,000	Box ...	80,000	Am. Car & Fdy.
	*500	Gondola	.....	Cambria Steel.
Phila., Balt. & Wash..	†65	Box ...	100,000	Company shops.
	†10	Cabin...	.....	Company shops.
	†66	Box ...	100,000	Pressed Steel.
	†225	Box ...	100,000	Company shops.
Phoenix Bridge Co....	†2	Derrick	100,000	Middletown Car Co.
Pitts. & Lake Erie....	*500	Coke...	80,000	Am. Car & Fdy.
	*50	Flat....	100,000	Pressed Steel.
	†1,000	Coal...	100,000	Pressed Steel.
	†1,000	Gondola	100,000	Pressed Steel.
	10	Caboose	.....	Company shops.
Pitts., Chartiers & Y..	*1	Flat....	80,000	Pressed Steel.
Pitts., Shawmut & Nor.	†250	Box ...	60,000	Am. Car & Fdy.
	*250	Gondola	100,000	Am. Car & Fdy.
Quanah, Acme & Pac..	10	Flat....	60,000	Southern I. & Equip. Co.
	1	Caboose	60,000	Southern I. & Equip. Co.
	5	Box ...	60,000	Hicks Loco. & Car.
Quebec Central	30	Box ...	60,000	Company shops.
Quebec Contracting Co.	10	Hrt con.	80,000	Hart-Otis Car Co.
Rio Grande & Eagle P.	20	Gondola	100,000	Pressed Steel.
Rock Island Southern..	75	Gondola	80,000	Haskell & Barker.
	50	Box ...	60,000	Haskell & Barker.
Rutland R.R.	†100	Flat....	100,000	Am. Car & Fdy.
St. Louis & San Fran..	*250	Tank ...	100,000	Am. Car & Fdy.
	*500	Coal...	100,000	Am. Car & Fdy.
	*250	Flat....	100,000	Am. Car & Fdy.
	150	Caboose	.....	Am. Car & Fdy.
	*500	Hopper	100,000	Am. Car & Fdy.
	*500	Gondola	100,000	Standard Steel.
St. Louis Southwestern	500	Stock...	80,000	Company shops.
	*10	Tank ...	.....	Am. Car & Fdy.
Salem Falls City & Wn.	†25	Flat....	70,000	Am. Car & Fdy.
San An. & Aran. Pass..	50	Flat....	80,000	Haskell & Barker.
	*15	Tank ...	80,000	Am. Car & Fdy.
	500	Vnt. bx.	60,000	Am. Car & Fdy.
	200	Stock...	60,000	Am. Car & Fdy.
San Diego & Arizona..	†10	Box ...	100,000	Ralston Steel.
	*36	Flat....	100,000	Ralston Steel.
	2	Tank ...	100,000	.....
	1	Caboose	.....	.....
	15	Flat....	60,000	Company shops.
S. F., O. & San J. Con.	†459	Flat....	80,000	Company shops.
S. F., Prescott & Phoe.	460	Flat....	60,000	Company shops.
Seaboard Air Line....	†509	Box ...	60,000	So. Balt. Steel C. & F.
	*200	Phsphtel	100,000	Barney & Smith.
	†50	Hrt con.	100,000	Rodger-Ballast Car Co.
	†1,000	Box ...	60,000	Pressed Steel.
	†25	Stock...	60,000	Pressed Steel.
Shannon Ariz. Ry....	14	Ore....	70,000	Hicks Loco. & Car.
	8	Flat....	60,000	Hicks Loco. & Car.
	2	Box ...	60,000	Hicks Loco. & Car.
Snyder, C. U.....	*12	Tank ...	80,000	Chicago Steel Co.
Solvay Process Co....	*3	Hopper	100,000	Ralston Steel.
Sonora Ry.	†100	Box ...	100,000	Am. Car & Fdy.
	6	Caboose	.....	Standard Steel.
Southern Pacific	†1,200	Box ...	100,000	Am. Car & Fdy.
	†300	Flat....	100,000	Pressed Steel.
	120	F. bdies	100,000	Pressed Steel.
	†150	Gondola	100,000	Pressed Steel.
	10	Caboose	.....	Standard Steel.
	†180	Hrt con.	100,000	Rodger-Ballast Car Co.
Sou. Pac. in Mexico...	†100	Box ...	100,000	Am. Car & Fdy.
	*100	Coal...	100,000	Pressed Steel.
Southern	†200	Stock...	60,000	Lenoir Car Co.
	†1,000	Vnt. bx.	60,000	Lenoir Car Co.
	1	Flat....	60,000	Mt. Vernon Car.
Sparks Shows, John H.	10	Caboose	.....	Company shops.
Spokane, P. & Seattle.	*3	Dump...	.....	Middletown Car Co.
Standard Steel Works.	4	Logging	40,000	W. L. Holman Co.
Stearns Lumber Co....	4	Hopper	80,000	Middletown Car Co.
Sterling Coal Co.....	1	Tank ...	60,000	W. L. Holman Co.
Standard Lumber Co....	15	Flat....	50,000	W. L. Holman Co.
Sullivan Co. R.R.....	*80	Coal...	80,000	Laconia Car Co.
S. Venzlente Lmbr. Co.	4	Flat....	50,000	W. L. Holman Co.
Tehuantepec National..	†210	Box ...	60,000	Haskell & Barker.
Temiscouta Ry.	4	Box ...	60,000	Rhodes Curry.
	1	Van ...	.....	Rhodes Curry.
Temiskaming & N. Ont.	†50	Box ...	80,000	Dominion Car & Fdy.
	*12	Cinder...	80,000	Dominion Car & Fdy.
	†7	Caboose	.....	Silliker Car Co.
Texas & N. Orleans...	212	F. bdies	100,000	Pressed Steel.
	12	F. bdies	80,000	Pressed Steel.
Texas Central	3	Caboose	.....	Company shops.
Texas Company	*5	Tank ...	80,000	Am. Car & Fdy.
	*25	Tank ...	60,000	Am. Car & Fdy.
	*70	Tank ...	80,000	Am. Car & Fdy.
Texas Southeastern...	50	Flat....	60,000	Am. Car & Fdy.
	28	Flat....	60,000	Company shops.
Tol. & Ohio Central..	†500	Box ...	60,000	Pullman.
	†1,000	Gondola	100,000	Ralston Steel.
Tor. Construct'n Co...	8	Flat....	60,000	Rhodes Curry.
Trinity & Brazos Val.	6	Box ...	60,000	Pullman.
Ulster & Delaware	1	Milk...	40,000	Company shops.
Union Pacific	†625	Box ...	100,000	Am. Car & Fdy.
	*150	Gondola	100,000	Pressed Steel.
	†250	Furn...	60,000	Standard Steel.
	†110	Stock...	80,000	Standard Steel.
	25	Caboose	Standard Steel.

*Asterisk indicates steel cars.

† Indicates steel underframe cars.

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Union Pacific.....	†515	Hrt con.100,000	Rodger-Ballast Car Co.
Union Railroad.....	†400	Box	Pressed Steel.
United Fruit Co.....	†115	Cane... 40,000	Middletown Car Co.
U. S. Government.....	5	Flat... 60,000	Mt. Vernon Car.
Vandalia R. R.	*52	Hopper 100,000	Cambria.
	*52	Gondola 100,000	Cambria.
	†72	Box ... 100,000	Am. Car & Fdy.
	†31	Stock... 100,000	Standard Steel.
Vermont Valley R.R....	*20	Coal... 80,000	Laconia Car Co.
Vicks., Shreve, & Pac..	8	Box ... 80,000	Western Steel C. & F.
	2	Coal... 80,000	Company shops.
	54	Box ... 80,000	Am. Car & Fdy.
	8	Coal... 80,000	Am. Car & Fdy.
Wabash-Pitts. Ter. Ry..	*500	Hopper 100,000	Standard Steel.
Weir Lbr. Co., R. W....	5	Logging 80,000	Orange Iron Works.
Wenatchee Val. & Nor..	10	Flat... 40,000	Am. Car & Fdy.
West Jersey & Seashore	†12	Box ... 100,000	Company shops.
	†5	Box ... 100,000	Pressed Steel.
	†27	Box ... 100,000	Company shops.
Wstin. Heater Despatch.	200	Refrig.. 60,000	Haskell & Barker.
Western Maryland	†550	Gondola 80,000	Standard Steel.
	†300	Box ... 80,000	Standard Steel.
	12	Caboose	So. Balt. Steel C. & F.
Western Pacific	50	Caboose	Haskell & Barker.
Westmoreland Coal Co.	100	Gondola	Cambria Steel.
	100	Hopper	Cambria Steel.
Willard Kitchen Co....	16	Hrt con. 80,000	Hart-Otis Car Co.
	16	Dump... 40,000	West. Wheeler Scraper.
	12	Dump... 20,000	West. Wheeler Scraper.
	2	Flat... 60,000	Rhodes Curry.
Woodward Iron Co....	*10	Dump... 120,000	Pressed Steel.

PASSENGER CARS ORDERED IN 1909.

Purchaser.	No.	Kind.	Builder.
Aberdeen & Asheboro..	1	Coach	Hicks Loco. & Car.
Abilene & Southern ...	2	Coach	Hicks Loco. & Car.
Acme, Red Riv. & Nor..	1	Coach (vest.)..	Am. Car & Fdy. Co.
Alabama & Vicksb'g....	1	Mail & baggage	Am. Car & Fdy. Co.
Ala. Great Southern...	*10	Coach	Pullman.
	†3	Mail	Am. Car & Fdy. Co.
	†2	Baggage	Am. Car & Fdy. Co.
Anglo Nfld Dev. Co....	1	Coach	Silliker Car. Co.
Ann Arbor	*1	Café parlor ...	Pullman.
	*2	Coach	Pullman.
Arizona & Colorado ...	†1	Combination ..	Pullman.
A., T. & S. F.....	†6	Coach	Pullman.
	†9	Baggage	Pullman.
	†10	Postal	Pullman.
	†7	Composite	Pullman.
	†1	Café observatn	Pullman.
	†4	Diner	Pullman.
	†20	Smoker	Pullman.
	†52	Chair	Pullman.
	†3	Chair & smokr	Pullman.
	†82	Coach	Pullman.
	†10	Part. coach ..	Pullman.
	†1	Parlor	Pullman.
	†41	Baggage	Am. Car & Fdy. Co.
	†18	Baggage	Am. Car & Fdy. Co.
	†12	Mail & baggage	Am. Car & Fdy. Co.
Atl. Birm. & Atl.....	3	Baggage	Hicks Loco. & Car.
Atlantic Coast Line...	†6	Coach	Hicks Loco. & Car.
	†4	Express	Hicks Loco. & Car.
	2	Mail & express	Harlan & Hollingsworth
	1	Private	Pullman.
Baltimore & Ohio	†45	Coach	Am. Car & Fdy. Co.
	†5	Pass. & bagg..	Am. Car & Fdy. Co.
	†10	Baggage	Barney & Smith.
Bellingham & B. C....	*1	Motor	McKeen Motor Co.
Boston & Albany	*2	Mail	Pullman.
Boston & Maine	50	Coach	Laconia Car Co.
	4	Bagg. & mail..	Laconia Car Co.
	6	Bagg. & smokr	Laconia Car Co.
	10	Milk	Laconia Car Co.
	20	Baggage	Laconia Car Co.
	1	Mail	Company shops.
	3	Bagg. & smokr	Am. Car & Fdy. Co.
Buff., Roch. & Pitts...	6	1st class coach	Rhodes Curry Co.
Canadian Northern ...	1	Café parlor ...	Crossen Car Co.
	3	Sleeper	Barney & Smith.
	2	2d class coach.	Preston Car & Coach.
	4	Bagg. & mail..	Preston Car & Coach.
	6	Baggage	Rhodes Curry Co.
	35	Vans	Crossen Car Co.
Canada Nor., Ont.....	1	Café parlor ...	Crossen Car Co.
	4	Parlor	Crossen Car Co.
	2	Pass. & bagg..	Silliker Car Co.
Can. Real Estate Co...	1	Private	Hicks Loco. & Car.
Canadian Nor., Quebec.	4	1st class coach	Silliker Car Co.
	2	Pass. & bagg..	Silliker Car Co.
Canadian Pacific	20	Bagg. & exp...	Company shops.
	4	Mail & exp...	Company shops.
	25	Observation ..	Company shops.
	10	Sleeper	Company shops.
	2	2d class coach.	Company shops.
	5	Diner	Company shops.
Caro., Clinchfld & O...	*6	Bagg. & exp...	Pressed Steel.
	†12	Coach	Hicks Loco. & Car.
Central of Georgia	15	Coach	Pullman.
	3	Mail & bagg..	Pullman.
	5	Express	Pullman.
	1	Pass. & bagg..	Pullman.
Central New England..	6	Coach	Wasom Mfg. Co.
Central Pacific	†2	Observation ..	Pullman.
	*45	Coach	Pullman.
	*4	Baggage	Pullman.
	†5	Mail	Pullman.
	1	Dining	Pullman.
Cent. of New Jersey...	†15	Coach (non-vs.)	Harlan & Hollingsworth
	†10	Coach, do....	Harlan & Hollingsworth
	†4	Coach (vest.)..	Harlan & Hollingsworth
	†1	Combination ..	Harlan & Hollingsworth
	†5	Combination ..	Company shops.
Charlotte Hrbr & Nor..	2	Bagg. & exp...	Barney & Smith.

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Charlotte Hrbr & Nor.	2	Bg., ml & exp.	Barney & Smith.
	5	Coach	Barney & Smith.
Chesapeake & Ohio....	3	Dining	Pullman.
	*4	Coach	Standard Steel.
	*4	Pass. & bagg..	Standard Steel.
	*1	Business	Pullman.
Chicago & Alton	2	Mail	Am. Car & Fdy. Co.
	4	Baggage	Barney & Smith.
	3	Chair	Am. Car & Fdy. Co.
Chic. & Nor. Westn....	*88	Coach	Pullman.
	*12	Chair	Pullman.
	*8	Chair & smoker	Pullman.
	*10	Smoker	Pullman.
	*2	Observ. smoker	Pullman.
	*6	Parlor	Pullman.
	*4	Observ. parlor.	Pullman.
	*10	Mail	Pullman.
	*8	Mail & bagg..	Pullman.
	*10	Baggage	Pullman.
	†7	Pass. & bagg..	Pullman.
	*5	Diner	Pullman.
C. & Oak Park El....	†20	Elevated cars..	J. G. Brill.
Chic., Burl. & Quincy..	†5	Diner	Pullman.
	†4	Club	Pullman.
	†12	Chair	Am. Car & Fdy. Co.
	†40	Chair	Barney & Smith.
	†8	Dining	Barney & Smith.
	†1	Club	Barney & Smith.
	†10	Baggage	Company shops.
	†15	Mail	Company shops.
Chic., Ind. & Southern.	2	Coach	Barney & Smith.
Chic., Ind. & Louisvl..	†5	Coach	Am. Car & Fdy. Co.
Chic., Kal. & Saginaw..	1	Bagg. & mail..	Barney & Smith.
Chic., Mil. & St. Paul..	†7	Mail	Company shops.
	†10	Baggage	Company shops.
	†30	Pass. refrig...	Company shops.
	†15	Coach	Barney & Smith.
	†10	Mail & bagg..	Barney & Smith.
	†2	Buffet library.	Barney & Smith.
	†10	Coach	Pullman.
	†10	Sleeper	Pullman.
	†15	Baggage	Pullman.
	†5	Dining	Pullman.
	*1	Compt. slpr ..	Barney & Smith.
	*9	Buffet observ..	Barney & Smith.
	*10	Tourist sleeper	Barney & Smith.
	*10	Baggage	Barney & Smith.
	*18	Bagg. & Mail..	Barney & Smith.
	*27	Coaches	Am. Car & Fdy. Co.
	*18	Baggage	Am. Car & Fdy. Co.
	*1	Compt. sleeper.	Pullman.
	*22	12-sec. sleeper.	Pullman.
	*36	10-sec. sleeper.	Pullman.
	*8	Tourist sleeper	Pullman.
	*4	Parlor	Pullman.
	*20	Dining	Pullman.
	*59	Coaches	Pullman.
Chic., R. I. & Gulf....	*11	Coach	Am. Car & Fdy. Co.
	*5	Baggage	Am. Car & Fdy. Co.
	*5	Pass. & bagg..	Am. Car & Fdy. Co.
Chic., R. I. & Pac.....	*29	Coach	Am. Car & Fdy. Co.
	*25	Baggage	Am. Car & Fdy. Co.
	*1	Pass. & bagg..	Am. Car & Fdy. Co.
	*6	Mail & bagg..	Am. Car & Fdy. Co.
	*15	Chair	Am. Car & Fdy. Co.
	*2	Mail	Am. Car & Fdy. Co.
	1	Observation ..	Pullman.
	*2	Motor	McKeen Motor Car.
Chic., St. P. M. & Om..	*12	Coach	Pullman.
	*4	Smoker	Pullman.
	*4	Baggage	Pullman.
	*2	Parlor	Pullman.
	*2	Dining	Pullman.
	*2	Postal	Pullman.
C., C., C., & St. Louis..	1	Dining	Pullman.
	*5	Bagg. & exp...	Barney & Smith.
	*3	Mail & bagg..	Barney & Smith.
	3	Smkg & bagg..	Barney & Smith.
	3	Dining	Barney & Smith.
	1	Café coach...	Barney & Smith.
	1	Pass. & bagg..	Barney & Smith.
	*1	Mail & bagg..	Barney & Smith.
Coal & Coke Ry. Co....	1	Bagg. & smokr	Barney & Smith.
	2	Coach	Barney & Smith.
Copper Range	1	Café observ...	Pullman.
Delaware & Eastern ...	2	Coach	Georgia Car.
	1	Combination ..	Georgia Car.
Den. & Rio Grande....	*11	Coach	Am. Car & Fdy. Co.
	*10	Bagg. & exp...	Am. Car & Fdy. Co.
Den., Lar. & N. W....	8	Coach	Company shops.
El Oro Min. Ry. Co...	1	Coach	Company shops.
	2	2d class coach.	Company shops.
Erie	*30	Express	Am. Car & Fdy. Co.
	*1	Motor	McKeen Motor Car Co.
Gallatin Val. Electric..	1	Combination ..	Am. Car & Fdy. Co.
Garden City, G. & Nor.	2	Coach	Hicks Loco. & Car.
Georgia & Florida	2	Mail & bagg..	Hicks Loco. & Car.
Georgia Northern	1	Coach	Hicks Loco. & Car.
	1	Comb. car	Hicks Loco. & Car.
Grand Trunk	6	Coach	Company shops.
	8	Parlor buffet..	Company shops.
	20	Baggage	Company shops.
Grand Trunk Pacific..	24	1st class coach.	Canada Car Co.
	10	Colonist	Canada Car Co.
	8	2d class coach.	Canada Car Co.
	5	Parlor café...	Canada Car Co.
	3	Dining	Canada Car Co.
	12	Baggage	Rhodes Curry.
Great Northern	34	Tourist sleeper	Barney & Smith.
	21	Dining	Barney & Smith.
	21	Compt. sleeper.	Barney & Smith.
	2	Parlor	Barney & Smith.
	5	Observ. parlor.	Barney & Smith.

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Great Northern.....	5 Vest, parlor...	Barney & Smith.	N. Y. Cent. & H. R....	2 Smoking	Am. Car & Fdy. Co.
	7 Smoking	Barney & Smith.		3 Dining	Pullman.
	30 Baggage	Barney & Smith.		*7 Buffet	Pullman.
	60 Coach	Barney & Smith.		*9 Mail	Pullman.
	30 Sleeper	Barney & Smith.		10 Milk	Company shops.
	10 Bagg. & Mail..	Am. Car & Fdy. Co.		*20 Bagg. & exp...	Am. Car & Fdy. Co.
Green Bay & Western..	10 Exp. refrig....	Am. Car & Fdy. Co.		*16 Bagg. & exp...	Standard Steel.
Gulf, Tex. & Western..	2 1st class coach	Hicks Loco. & Car.		*1 Pay	Company shops.
Halifax & Southwestern	1 Mail & bagg...	Hicks Loco. & Car.		50 Dining	Barney & Smith.
Hastings Express....	2 Café parlor ..	Rhodes Curry.		50 Coach	Am. Car & Fdy. Co.
Hocking-Sunday Creek..	*4 Express	Pullman.		*20 Baggage	Standard Steel.
Hubbard, D. H.....	1 Motor	McKeen Motor Car.		*2 Buffet	Barney & Smith.
Illinois Central	1 Private	Hicks Loco. & Car.	N. Y., N. H. & Hartford	25 Coach (vest.)..	Bradley Co.
	10 Mail & exp....	Company shops.		2 Mail & bagg...	Bradley Co.
	*8 Coach	Pullman.		5 Horse & Carr..	Bradley Co.
	*6 Coach	Pullman.		20 Bagg. & Smokr	Bradley Co.
	*5 Chair	Pullman.		10 Smoker	Bradley Co.
Ill. Traction System...	2 Sleeper	Am. Car & Fdy. Co.		1 Mail	Bradley Co.
	7 Passenger	Danville Car.		5 Smoker	Bradley Co.
	1 Private	Danville Car.		2 Pass. & bagg...	Bradley Co.
Interboro Rap. Tran..	40 Elevated cars..	Barney & Smith.		30 Coach (non-ves)	Bradley Co.
	20 Elevated cars..	Wasom Mfg. Co.	N. Y., O. & West'n...	8 Coach	Harlan & Hollingsworth
	20 Elevated cars..	St. Louis Car Co.	Norfolk & Southern...	*1 Motor	McKeen Motor Car.
	20 Elevated cars..	Jewett Car Co.		2 Baggage	Harlan & Hollingsworth
	*110 Subw'y coaches	Am. Car & Fdy. Co.	N. & S. Carolina....	1 Bagg. & pass..	Hicks Loco. & Car.
	*40 Subw'y coaches	Standard Steel.		1 Coach (vest.)..	Hicks Loco. & Car.
	*100 Subw'y coaches	Pressed Steel.	North Coast	*2 Motor	McKeen Motor Car.
Intercolonial	3 Baggage	Crossen Car.	Northern Pacific	*1 Motor	McKeen Motor Car.
	6 Box, bagg....	Rhodes Curry.		20 1st class coach	Barney & Smith.
	4 Colonist	Preston Car & Coach.		10 Tourist sleeper.	Barney & Smith.
	3 Colonist	Rhodes Curry.		15 Dining	Barney & Smith.
	10 Miscel.	Sillker Car.		6 Parlor	Barney & Smith.
	3 Colonist	Sillker Car.		11 Observation ..	Barney & Smith.
	2 Mail & bagg...	Crossen Car.		20 Coach	Am. Car & Fdy. Co.
	5 3d class coach.	Preston Car & Coach.		6 Coach & bagg..	Am. Car & Fdy. Co.
Jackling, D. C.....	*1 Private	Pullman.		12 Mail & exp...	Am. Car & Fdy. Co.
Kentwood & Eastern ..	1 Motor	Fairbanks-Morse.		20 Baggage	Am. Car & Fdy. Co.
	1 Coach	Hicks Loco. & Car.		28 Sleeper	Pullman.
Kewanee, Grn Bay & W.	1 1st class coach	Hicks Loco. & Car.	Northampton & Bath...	1 Pass. & bagg...	Harlan & Hollingsworth
Keweenaw Central	6 Coach	Pullman.	Norwood & St. Lawrence	1 Coach	Hicks Loco. & Car.
Lake Shore & M. S....	20 Coach	Pullman.	Ocean Shore Ry.....	*7 Coach	W. L. Holman Co.
	5 Coach	Barney & Smith.	Ohio Electric	1 Steam coach ..	Cincinnati Car.
	2 Dining	Pullman.	Oregon & Cal.	*2 Dining	Pullman.
	*2 Buffet	Pullman.		*5 Coach	Pullman.
	*4 Mail	Pullman.		*2 Baggage	Pullman.
	2 Café coach ..	Pullman.		*2 Motor	McKeen Motor Car.
	10 Coach	Am. Car & Fdy. Co.		*2 Dining	Pullman.
	30 Coach	Barney & Smith.	Ore. R.R. & Nav.....	*2 Observation ..	Pullman.
	3 Dining	Barney & Smith.		*2 Combination ..	Pullman.
	*2 Baggage	Standard Steel.		*6 Coach	Pullman.
	*2 Buffet	Barney & Smith.		*4 Baggage	Pullman.
Lehigh Valley	*18 Coach	Standard Steel.	Oregon Short Line	*2 Motor	McKeen Motor Car.
Little River R. R.....	1 Coach & bagg..	Georgia Car.		*2 Observation ..	Pullman.
Long Island R.R.....	*100 Motor	Am. Car & Fdy. Co.		*6 Combination ..	Pullman.
	*15 Pass. & bg. mtr	Am. Car & Fdy. Co.		*15 Coach	Pullman.
	*15 Bagg. motor ..	Standard Steel.		*14 Baggage	Pullman.
	*1 Private	Pullman.		*6 Mail	Pullman.
La. & Arkansas.....	36 Coach	Barney & Smith.	Pan American R.R....	*2 Motor	McKeen Motor Car.
	11 Mail & bagg...	Barney & Smith.		4 Coach	Barney & Smith.
Louisville & Nash.....	3 Postal & bagg.	Company shops.		4 Mail, bag. & Exp	Pressed Steel.
	5 Baggage	Company shops.	Penn. Lines West.....	*18 Mail	Am. Car & Fdy. Co.
	4 Coach (vest.)..	Company shops.		*17 Mail	Standard Steel.
	6 C'ch (non-ves.)	Company shops.		*6 Coach	Standard Steel.
Luse Land Company...	1 Private	Hicks Loco. & Car.		*6 Pass. & bagg...	Standard Steel.
Maine Central	2 Bagg. & mail..	Laconia Car Co.		*1 Private	Pullman.
	2 Pass. & bagg...	Laconia Car Co.	Penn. R. R.....	*27 Postal-storage	Pressed Steel.
	*6 Coach	Laconia Car Co.		*41 Coach	Am. Car & Fdy. Co.
	*3 Bagg. & mail..	Laconia Car Co.		*15 Pas. & bagg...	Am. Car & Fdy. Co.
Maricopa & Phoenix ..	*2 Motor	McKeen Motor Car.		*32 Coach	Am. Car & Fdy. Co.
Marquette & S. Eastern	2 Coach	Hicks Loco. & Car.		*18 Pass. & bagg...	Am. Car & Fdy. Co.
Marshall & East Texas.	1 Coach	Am. Car & Fdy. Co.		*30 Coaches	Standard Steel.
	1 Mail, bag. & P	Am. Car & Fdy. Co.		*16 Coach	Standard Steel.
McArthur, J. D.....	1 Private	Hicks Loco. & Car.		*30 Coach	Pullman.
Michigan Central	11 Coach	Barney & Smith.		*34 Dining	P. R.R., Alt. Car shops.
	1 Dining	Pullman.		*8 Bagg. & mail..	P. R.R., Alt. Car shops.
	*2 Buffet	Pullman.	Peoria & Pekin Union.	*47 Postal-letter ..	P. R.R., Alt. Car shops.
	*10 Bagg. & Exp...	Pullman.		2 Coach	Barney & Smith.
	3 Coach	Barney & Smith.		1 Combination ..	Barney & Smith.
	2 Smkg. & bagg.	Barney & Smith.	Pere Marquette	3 Coach	Company shops.
	2 Bagg. & mail..	Barney & Smith.	Phila. & Reading....	*45 Coach	Harlan & Hollingsworth
	2 Bagg. ml & exp.	Barney & Smith.	Phila. Rapid Transit.	20 Elevated	Pressed Steel.
	15 Coach	Barney & Smith.	Pitts. & Lake Erie...	2 Coach	Barney & Smith.
	4 Dining	Barney & Smith.	Quebec Central	2 Bagg. & mail..	Company shops.
	1 Café coach ..	Barney & Smith.		2 2d class coach.	Company shops.
	2 Pass. & bagg...	Barney & Smith.	Quincy Western.	1 Pass. & bagg...	Am. Car & Fdy. Co.
	*10 Baggage	Standard Steel.	Rich., Fredk. & Pot.	*3 Coach	Am. Car & Fdy. Co.
	*2 Buffet	Barney & Smith.	Rock Island Southern..	8 Pass. & smoker	Niles Car & Mfg.
	1 Coach	Barney & Smith.		2 Express	Niles Car & Mfg.
Milltown Air Line	1 Smoker & bagg.	Pullman.	Rutland R.R.....	6 Milk	Bradley Co.
Minneapolis & St. L....	2 Compt. observ.	Barney & Smith.	St. J. & Gr. Island..	*6 Motor	McKeen Motor Car.
Minn., St. P. & S. S. M.	3 Dining	Barney & Smith.	St. Louis & S. F.....	*22 Coach	Am. Car & Fdy. Co.
	6 Mail & exp...	Barney & Smith.		*10 Pass. & bagg...	Am. Car & Fdy. Co.
	4 Coach	Barney & Smith.		*7 Baggage	Am. Car & Fdy. Co.
	*2 Bagg. & mail..	Barney & Smith.		*6 Chair	Am. Car & Fdy. Co.
Miss. R. & Bonne Terre.	2 Coach	Am. Car & Fdy. Co.		*6 Mail & coach..	Am. Car & Fdy. Co.
Mo., Kan. & Texas....	*5 Express	Am. Car & Fdy. Co.		*9 Mail & bagg...	Am. Car & Fdy. Co.
Mobile & Ohio	*2 Bagg. & mail..	Am. Car & Fdy. Co.		*5 Café coach ..	Am. Car & Fdy. Co.
	*7 Baggage	Am. Car & Fdy. Co.		*6 Dining	Am. Car & Fdy. Co.
	*10 Coach	Am. Car & Fdy. Co.	St. L. Southwestern	*14 Coach	Am. Car & Fdy. Co.
	*2 Coach & bagg.	Am. Car & Fdy. Co.		*6 Chair	Am. Car & Fdy. Co.
	*10 Chair	Am. Car & Fdy. Co.	Salem, F. C. & West...	*1 Motor	McKeen Motor Car.
	1 Private	Am. Car & Fdy. Co.	S. A. & Aran. Pass....	2 Baggage	Company shops.
Mo., Okla. & Gulf.....	2 Coach	Barney & Smith.	S.F., O. & S. J. Con. Ry	16 Coach	Company shops.
	2 Chair	Barney & Smith.	S. P., L. A. & Salt Lake	3 Dining	Pullman.
	2 Bagg. & mail..	Barney & Smith.		*3 Mail	Pullman.
Mob. Jackson & Kan. C.	1 Baggage	Company shops.		*3 Baggage	Pullman.
Munising Ry.	2 Coach	Hicks Loco. & Car.		*1 Motor	McKeen Motor Car.
N., Chatt. & St. L....	2 Coach	Am. Car & Fdy. Co.	S. F., Prescott & Phoe.	2 Café Parlor....	Pullman.
	3 Part. coach...	Am. Car & Fdy. Co.	Seaboard Air Line....	5 Coach	Barney & Smith.
	3 Bagg. & mail..	Company shops.		5 Pass. & bagg...	Barney & Smith.
	1 Baggage	Company shops.		3 Mail & Bagg...	Barney & Smith.
Nat. Rys. of Mex.....	1 Coach	Pullman.		5 Express	Barney & Smith.
N. O. & Nor. Eastern..	1 Mail & bagg...	Am. Car & Fdy. Co.		3 Coach	Barney & Smith.
N. Y. Cent. & H. R....	50 Coach	Am. Car & Fdy. Co.		3 Pass. & bagg...	Barney & Smith.
				4 Mail & bagg...	Barney & Smith.

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Escanaba & Lake Sup.	1	19x26	133,000	4-6-0	Baldwin	Michigan Central.....	13	21x28	162,500	0-6-0	American
Eureka Hill Ry.	1	12x15	140,000	Shay	Lima	20	23x32	236,000	2-8-0	American	
Fitchburg & Co.	2			S. Tank	Vulcan I. Wks.	5	22x26	245,500	4-6-2	American	
Florida East Coast.....	6	20x26	200,000	4-6-2	American	5	21x28	162,500	0-6-0	American	
Ft. Dodge, D. M. & So. 3				Electric	Baldwin	10	23x32	236,000	2-8-0	Mont. Loco.	
Fresno Copper Co.	1	16x24	80,000	0-6-0-8	Davenport	5	22x26	245,500	4-6-2	Mont. Loco.	
Gahagan, Walter H.	4	17x24	120,000	4-6-0	Baldwin	1	24x28	275,000	0-10-0	Mont. Loco.	
	4	10x16	38,000	S. Tank	Baldwin	1	24x28	275,000	0-10-0	Mont. Loco.	
	4	10x16	38,000	S. Tank	H. K. Porter	Minn. & St. Louis.....	7	21x30	172,000	2-8-0	Baldwin
Gallatin Valley Ry.	1	17x24			Baldwin	4	21x26	182,000	4-6-0	Baldwin	
Galv., Har. & San Ant.*12	21x33x30	310,000	Mallet	Baldwin	3	20x28	157,000	2-6-0	Baldwin		
Gard. City, Gulf & Nor. 1	17x24	93,000	4-4-0	Baldwin	M., St. P. & St. Ste. M. .	4	19x24	127,500	0-6-0	American	
Georgia & Florida.....	2	19x26	144,000	4-6-0	Baldwin	4	20x26	206,000	4-6-2	American	
Georgia Railroad.....	2	20x26	165,500	4-6-0	Baldwin	*6	23x35x34	204,000	2-8-0	American	
	2	20x26	165,500	4-6-0	Baldwin	4	24 1/2 x 26	228,000	4-6-2	American	
Georgia So. & Florida..	4	21x28	190,500	2-8-0	Baldwin	4	25x30	213,000	2-8-0	American	
	2	22x28	138,500	4-6-2	Baldwin	Mississippi Central ...	2	19x26	136,000	4-4-0	American
Gila Val., Globe & Nor. 1	19x26	140,000	0-6-0	Baldwin	Missouri & No. Ark.	2	22x28	182,200	4-6-0	Baldwin	
Gilchrist-Fordney Co. .	1	20x24	142,100	2-6-2	Baldwin		2	22x28	194,000	2-8-2	Baldwin
Gilmore & Pittsburgh..	2	20x28	213,000	2-8-2	Baldwin	Missouri, Kan. & Tex..	16	20x28	170,500	4-6-0	American
	1	18x26	213,000	2-8-2	Baldwin	Missouri, Okla. & Gulf..	4	20x26	165,000	2-8-0	Baldwin
	3	20x24	213,000	2-8-2	Baldwin		3	18x26	115,000	4-4-0	Baldwin
	1	19x26	213,000	2-8-2	Baldwin		3	18x24	113,770	4-6-0	Baldwin
Goble-Nehalem Pac.	1	16x24	72,000	0-4-0-8	Davenport	Missouri Pacific	30	22x30		2-8-0	American
Goodland Cypress Co. .	1	11x16	46,000	0-4-4	Davenport	Monongahela Connect'g.	4	20x26	144,000	0-6-0	H. K. Porter
Grand Rap. & Indiana. 4	20x26	170,000	4-6-0	American	Monongahela R. R.	8	21x30	192,000	2-8-0	American	
Grand Trunk Pacific..	25	18x24	121,688	4-4-0	Mont. Loco.	Monroe & Southeast'n.	1	10x10	72,000	Shay	Lima
	25	20x26	161,976	2-6-0	Canadian Loco.	Montpel. & Wells Riv. .	1	18x26	127,000	2-6-0	Baldwin
Grand Trunk R. R.	25	19x26	136,000	2-6-0	Canadian Loco.	Moody Bros.	1	9x14	28,000	0-4-0	Davenport
	*15	21 1/2 x 35x32	211,200	2-8-0	Montreal Loco.	Morehead & No. Fork'g.	1	12x20	56,000	S. Tank	H. K. Porter
	10	22x28	210,000	4-6-2	Comp. Shops	Morgantown & King'w'd.	1	18x26	130,000	4-6-0	Baldwin
Great Northern.....	20	26x30	235,750	4-6-2	Baldwin	Morley Cypress Co.	2	22x28	179,000	2-8-0	Baldwin
	20	26x30	185,000	4-6-0	Baldwin	Nash., Chat. & St. L. .	1	10x14	31,000	0-4-0	Davenport
	*10	23x35x32	370,000	Mallet	Baldwin	Nelson-Neal Lmbr. Co. .	4	24x28	169,000	4-6-0	Baldwin
	1	10x14	31,000	0-4-0	Davenport	Nevada Northern	1		84,000	Geared	Heisl
Gulf, Sabine & Rd. Riv. 1	16x24	98,000		Baldwin	Newburgh & So. Shore. .	1	21x30	168,000		American	
Gulf, Texas & Western. 2	19x26	137,000	2-6-0	American	New Canadian Co.	1	18x24	105,000	0-6-0	Baldwin	
	2	19x26	137,000	2-6-0	American	N. Y. & Pa. Red'w'd Co.	2	18x24	109,000	4-6-0	American
Hardaway, B. H.	1		84,000	Geared	Heisl	N. Y. C. & H. R. R.	1		62,000	Geared	Heisl
Hartwell Ry.	1	18x24	105,000	2-6-0	American		25	23x32	236,000	2-8-0	American
Homestead Plantation. 1	7x12	24,500	0-4-4	Davenport		25	22x28	266,000	4-6-2	American	
House, A. C.	1		64,000	Geared	Heisl		23	21x28	163,000	0-6-0	American
Hunt. & Broad Top..	2			2-8-0	Baldwin	N. Y., Chi., & St. L. .	12	22x28	266,000	4-6-2	American
Houston Belt. & Ter..	3	19x24	127,000	0-6-0	Baldwin		25	19x24	140,500	4-6-0	American
Idaho & Wash. No....	1	22x28	184,000	4-4-2	Baldwin		10	18x24	103,450	0-6-0	American
Idaho Southern	1			4-4-0	American	N. Y., N. H. & H.	2			Electric	Westinghouse
Illinois Central.....	5	22x28	222,000	4-6-2	Baldwin	N. Y., Ont. & Western. 3	20 1/2 x 26	150,000	0-6-0	American	
	18	22x30	223,000	2-8-0	Baldwin	Norfolk & Western....	6	22 1/2 x 28	247,000	4-6-2	American
Illinois Tract. System. 2				Electric	Baldwin		*5	24 1/2 x 39x30	390,000	Mallet	Baldwin
Indiana Harbor Belt..	3	21x28	163,000	0-6-0	American		*5	24 1/2 x 39x30	360,000	Mallet	American
Indiana Northern	1	17x24	83,000	0-4-0	Baldwin	Norf. & Portsm. Belt... 1				Switch	Baldwin
Indiana Steel Co.	6	17x20		0-4-0	H. K. Porter	No. & So. Carolina....	2	18x24	99,000	4-6-0	Baldwin
Intercolonial.....	10	21x28	164,850	2-8-0	Can. Loco.	North Coast	2	20x26	155,000	2-8-0	American
Internat. & Gt. Nor..	5	20x28	187,000	4-6-2	Montreal Loco.	Northern Central	2	22x26	188,600	4-4-2	Comp. Shops
Int. Ry. of N. Bruns..	1	18x24	174,350	4-6-0	Baldwin		3	20x24	144,100	0-6-0	Comp. Shops
Iowa Central.....	12	21x30	108,000	4-6-0	Montreal Loco.	Northern Pacific.....	13	22x26	233,250	4-6-2	Baldwin
Jeffrey, Donald	3	10x16	36,000	0-4-0	Davenport		31	22x26	233,500	4-6-2	Baldwin
Johnson, Dauchy & Carey 7	10x16	36,000	0-4-0	Davenport		*5	26x40x30	425,900	Mallet	Baldwin	
	2	16x24	72,000	0-4-0-8	Davenport	*6	20x31x30	300,300	Mallet	Baldwin	
Jones & Laughlin S. Co. 2	14x20	75,000	0-4-0	H. K. Porter		40	24x30	265,000	2-8-2	American	
	2	18x24	117,000	0-4-0	H. K. Porter		15	20x26	148,000	0-6-0	American
Juragua Iron Co.	1	16x20	70,000	2-6-0	Baldwin		10	20x26	148,000	0-6-0	American
Kansas City Belt....	2	19x24	121,000	0-6-0	Baldwin	No. Red'w'd Lmbr. Co. .	1		72,000	Geared	Heisl
K. C., Mex. & Orient..	5	22x30	207,000	2-8-0	American	O'Brien, Fowler & Mc-					
	4	19x26	139,000	0-6-0	American	Dougall	2	18x24	117,000	2-6-0	Canadian Loco.
Kew., Gr. Bay & Wes..	1	19x26	133,000		American	Ohio Construction Co. .	1	10x16	36,000	0-4-0	Davenport
Lake Shore & Mich Co.	20	23x30	241,000	2-8-0	American	Oregon & California... 4	22x28	203,000	4-6-0	Baldwin	
	40	23x32	236,000	2-8-0	American		2	19x26	140,000	0-6-0	Baldwin
	50	22x28	266,000	4-6-2	American	Oreg. R. R. & Nav. Co. 6	22x28	203,000	4-6-0	Baldwin	
	10	20x26	148,000	0-6-0	American		2	19x26	140,000	0-6-0	Baldwin
Lake Sup. & Ishp....	5	20x28	174,000	2-8-0	American	Oregon Short Line....	7	22x28	203,000	4-6-0	Baldwin
Lake Sup. T. & T. Co. 1	20x24	144,000	0-8-0	Baldwin	Oregon Tlm. & Lum. Co. 1			84,000	Geared	Heisl	
Lake Terminal Ry....	3	21x26	137,000	0-6-0	Baldwin	Ore-Wash. Logging Co. 1			124,000	Geared	Heisl
Lehigh Valley	4	21x28	170,000	0-8-0	American	Pacific & Eastern.....	1		84,000	Geared	Heisl
	10	21x28	203,000	4-6-0	Baldwin	Pac. Coast Coal Mines. 2	14x22	79,000	2-4-2	Montreal Loco.	
	3	20x24	127,550	0-6-0	Baldwin	Pacific Lumber Co.	1	16x24	111,000	2-6-2	Baldwin
Liberty White Ry....	1	12x15	140,000	Shay	Lima	Pac. Port. Cement Co. .	1	19x24	120,000	0-6-0	Baldwin
Little River R. R....	*1	15x23x22	165,000	Mallet	Baldwin	Pardee & Curtin L. Co. 1			72,000	Geared	Heisl
	1	12x12	150,000	Lima	L. & M.	Pennsylvania	24			Electric	West. El. & Mfg
Louisiana & Pacific...*	1	14x21x22	140,000	Mallet	Baldwin	Pennsylvania Steel.....	2				American
Louisiana Ry. & Nav..	3	15x20	83,000	2-6-2	Baldwin	Penna. Railroad.....	19	24x28	238,000	2-8-0	Comp. Shops
	3	18x24	122,150	2-6-0	Baldwin		3	18 1/2 x 24	116,500	0-4-0	Comp. Shops
	1	18x24	101,000	4-4-0	Baldwin		5	22x26	188,600	4-4-2	Comp. Shops
Louisville & Nashville..	20	21x28	187,000	2-8-0	Comp. Shops	Penn. Lines W. of P. .	27	20x24	144,100	0-6-0	American
	4	20x28	183,000	4-6-2	Comp. Shops		13	20x24	144,100	0-6-0	Comp. Shops
	1	19x24	123,000	2-6-0	Baldwin		5	24x28	238,000	2-8-0	Comp. Shops
Lufkin Land & L. Co..	1	18x24	116,000	4-4-0	Baldwin		50	24x28	238,000	2-8-0	Baldwin
Macon, Dub. & Sav..	3	22x28	214,000	4-6-2	American		10	22x26	188,600	4-4-2	Comp. Shops
	2	18x24	126,000	4-4-0	American	Peoria & Pekin Union..	3	21x28	165,000	0-6-0	American
	1	18x24	126,000	4-4-0	American	Pere Marquette	12	19 1/2 x 28	175,500	2-8-0	American
	2	20x26	137,000	0-6-0	American	Phila. & Reading.....	10				Comp. Shops
	1	22x28	214,000	4-6-2	American	Phila., Balt. & Wash..	13	22x26	188,600	4-4-2	Comp. Shops
	5	22x28	193,000	2-8-0	American	Pitcher, H.	1		64,000	Geared	Heisl
Manistee Mill Co.	1			Geared	Heisl	Pittsb. & Lake Erie....	10	20x26	140,000	0-6-0	Comp. Shops
Manufacturers' Ry....	1	20x26	50,500		American		15	20x26	140,000	0-6-0	Comp. Shops
Marquette & S. E....	3	20x28	174,000	2-8-0	American		15	21x30	192,000	2-8-0	American
Marsch, John.....	3	16x24	80,000	0-6-0-8	Davenport	Pittsb. Iron Ore Co. .	4		120,000	Geared	Heisl
Marysv. Arlington Ry.	1	12x12	120,000	Shay	Lima	Postal Milling Co.	1		24,000	Gasine. Mtl. Loco.	
Mexico North Western. 4				4-6-0	Baldwin	Prettyman & Son, J. F. .	1		64,000	Geared	Heisl
Mexican Railway.....	4	15x20	83,000	2-8-0	Baldwin	Quebec Central	2	19x26	144,500	4-6-0	Canadian Loco.
Mexican Southern	5	17x20	88,000	2-8-0	Baldwin	Quebec Contracting Co.	2	10x16	36,000	0-4-0	Montreal Loco.
Michigan Alkali Co....	1	19x24	115,000	0-6-0	Baldwin	Quincy Lumber Co.	1		120,000	Geared	Heisl
Michigan Central	1	14x22	54,000	0-4-0	American	Quincy Western	1	17x24	68,000	Forney	American
	18	23x32	236,000	2-8-0	American	Ragley Lumber Co.	1			4-6-0	American
	6	22x26	245,500	4-6-2	American	Roanoke R. R. & T. Co. 1			48,000	Geared	Heisl
	6	22x26	245,500	4-6-2	Mont. Loco.	Rock Island Southern..	1	18x24	100,000	0-6-0	Baldwin
	2	21x28	162,500	0-6-0	Mont. Loco.	Rutland R. R.	4	22x26	198,000	4-6-0	American
							4	22x30	209,000	2-8-0	American
						Saginaw & Flint.....	6				Baldwin
						Sewell Valley Ry.	1	11x12	100,000	Shay	Lima
						St. John's Riv. Term..	1	19x24	127,500	0-6-0	Baldwin

*Asterisk indicates steel cars.

†Indicates steel underframe cars.

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St. L. & San Fran....	15	22x30	201,500	2-8-0	Baldwin
	15	23x30	201,000	2-8-0	Baldwin
	20	26x28	212,000	4-6-2	Baldwin
St. Louis Southwestern....	10	22x30	195,000	2-8-0	Baldwin
	6	21x28	185,000	4-6-0	Baldwin
San Diego & Arizona....	1	18x24	90,000	0-6-0	American
Seaboard Air Line....	15	21x28	172,000	4-6-0	Baldwin
	5	19x28	144,000	0-6-0	Baldwin
Shannon Arizona Ry....	2	17x20	111,000	2-8-0	Baldwin
Shattuck-Edinger Co....	1	6x10	15,000	0-4-0	Davenport
	1	11x16	40,000	0-4-0	Davenport
	1	12x16	46,000	0-4-0	Davenport
Shelvin, E. C., Lbr. Co....	1		84,000	Geared	Heisler
Sierra N. Wd. & L. Co....	4		10,000	Gasline	Milwaukee Loc.
Slims, G. W.....	1		40,000	Geared	Heisler
Smith & Morrison.....	1		48,000	Geared	Heisler
Smith, L. J.....	5	22x30	204,000	2-8-0	American
	4	22x30	184,000	2-8-0	Baldwin
	5	22x30	206,000	2-8-0	Baldwin
	2	22x30	206,000	2-8-0	Baldwin
South Buffalo R. R.....	2			0-6-0	American
Southern Pacific.....	4	21x28	174,000	2-6-0	Baldwin
So. Pac. in Mexico.....	15	21x28	174,000	2-6-0	Baldwin
Southern Railway.....	10	22x28	220,000	4-6-2	Baldwin
Southern Utah Ry.....	1	20x24	153,000	2-8-0-8	Lima
Spok., Port. & Seattle.*10		15&25x26	213,000	2-2-1	Baldwin
S. R. & R. Lakes R. R....	1	10 1/2 x14	50,000	Forney	Baldwin
S. Ant. & Aran. Pass....	1	18x24	100,000	4-4-0	Baldwin
Standard Steel Works....	1	19x24	109,000	0-6-0	Baldwin
Staten Isl. Rap. T....	4	16x24	116,300	4-4-0	American
Stearns Salt & Lbr. Co....	1				Baldwin
Stone & Webster E. Co....	1			0-6-0	American
	7	9x14	28,000	0-4-0	Davenport
Sugarland Ry.....	1	17x24	105,000		Baldwin
Sup. & Southeast'n Ry....	1	17x24	112,000	2-8-0-8	Lima
Temiscouta Ry.....	2	18x24	108,500	4-6-0	Montreal Loco.
Temiskaming & N. Ont....	2	19x26	128,000	0-6-0	Canadian Loco.
	2	19x24	146,000	4-6-0	Canadian Loco.
	4	19x24	146,000	4-6-0	Canadian Loco.
Tenn. Coal, I. & R. R....	1	16x20			H. K. Porter
	2	8x14			H. K. Porter
Ter. R.R. Assn. of St. L.10		20x26	141,000	0-6-0	American
Texas Central.....	3	18x24	130,000	4-6-0	American
Thompson Bros. L. Co....	1	13x18			H. K. Porter
Three States Lbr. Co....	1		44,000	Geared	Heisler
Tioga & Southeastern....	1	15x24	90,000	2-6-0-8	Lima
Tor., Ham. & Buffalo....	1	22x28	208,000	2-8-0	Montreal Loco.
Union Lumber Co.....	1		90,000	Geared	Heisler
	1		160,000	Geared	Heisler
Union Pacific.....	21	22x28	222,000	4-6-2	Baldwin
	10	19x26	140,000	0-6-0	Baldwin
	*3	26&40x30	425,900	Mallet	Baldwin
Vach. & L. des All. Ry....	1	9x14	35,000	0-4-4	Davenport
Vandalla.....	7	24x28	238,000	2-8-0	American
	4	24x26	260,000	4-6-2	American
	2	21x26	182,000	4-4-2	American
	2	22x24	169,000	0-6-0	Penn. R. R.
Virginian.....	7	24x32	254,000	2-8-2	Baldwin
Wab.-Pittsb. Terminal....	2	22x30	225,300	2-8-0	American
	9	22x32	228,400	2-8-0	American
	1	25x32	228,400	2-8-0	American
Walsh Const. Co.....	6	16x24	72,000	0-4-0-8	Davenport
Wenatchee Val. & Nor....	1	18x24	132,750	2-6-2	Baldwin
West Ky. Coal Co.....	1			4-6-0	American
West Side Belt R. R....	*2	20 1/2 & 33x32	328,000	Mallet	American
West'n Maryland R. R....	5	22x28	188,800	4-6-2	Baldwin
	*2	23&35x32	342,000	Mallet	Baldwin
Western Pacific.....	45	22x28	203,000	2-8-0	American
	21	21x26	184,000	4-6-0	American
	12	20x26	149,000	0-6-0	American
West'house Air R. Co....	1		7,000	Gasline	Milwaukee Loc.
White, A. C.....	1		84,000	Geared	Heisler
Wichita Falls & So....	2	18x26	116,600	2-6-0	Baldwin
Winston-Dear Co.....	1		46,000	Geared	Heisler
Wolv. Port. Cem. Co....	1		7,000	Gasline	Milwaukee Loc.
Woodward Iron Co....	1	20x26	164,000	2-6-2	Baldwin
	1	16x24	111,000	2-6-2	Baldwin
Wrightsv. & Tennille....	1	18x26	128,500	4-6-0	Baldwin

*Asterisk indicates steel cars.

† Indicates steel underframe cars.

CHARLES B. DUDLEY.

BY B. W. DUNN,

Chief Inspector of Bureau for the Safe Transportation of Explosives.

My first impressions of Dr. Charles B. Dudley came from the frequency with which I found it useful to consult the Pennsylvania Railroad specifications, and these impressions were corroborated by the practice observed among technical men to accept the specifications as standards. Later, after having enjoyed for several years the pleasure and the advantage of an intimate association with the Doctor, I learned something of the difficulties that he overcame in the development of these specifications.

Close and continued application to work and to study; an inspiring and unselfish loyalty to the Pennsylvania Railroad; an ability to consider questions from different points of view and thereby to appreciate the difficulties of the manufacturer of materials, while forcing him to make additional efforts to meet the necessities of the consumer; a disposition so genial, a patience so vast and an optimism so contagious, as to com-

pel the willing co-operation of his associates; these were some of the traits that distinguished Doctor Dudley.

It is easy to understand why the members of the American Society for Testing Materials insisted year after year on making him their president, and why a handsome loving cup from them occupied such a conspicuous position in his home. Those who read the proceedings of this society will note the breadth and the soundness of view as well as the charm and the dignity of style with which his annual presidential addresses review modern progress in the testing and standardizing of materials for construction purposes. They will note also the frequent and valuable contributions by Doctor Dudley to discussions on a great variety of technical subjects. At Copenhagen last summer he attended, as a delegate, the meeting of the International Society for Testing Materials and was elected president of that society to serve until its next meeting in the United States in 1912. The honor was great, but no greater than the merit of its modest recipient.

I met him for the first time in 1905, shortly after the disastrous accident on the Pennsylvania Railroad at Harrisburg which involved the explosion of a carload of dynamite. From that time until his death he devoted a large part of his time to promoting the safe transportation of dangerous articles. Only those closely associated with him during the last years of his life appreciate his many sacrifices to this work. Hurried journeys that called for the strength of a younger man, all day conferences with manufacturers and shippers in successful efforts to win their co-operation, patient reviews of technical laboratory reports followed by useful suggestions for the guidance of his subordinates, were some of the "extras" to a program already full.

His friends admired him much, but they loved him more. Who of them can ever forget his characteristic greeting, the contagious smile that banished temporarily, at least, all your troubles, the double hand grasp, the effectionate pat on your shoulder, that accompanied his "How are you?"

GRADE CROSSINGS.*

BY H. J. PFEIFER,

Engineer M. of W., Term. R. R. Association of St. Louis.

The remarks I am about to make are not an expression of the views of the management of St. Louis railways; they are merely the individual ideas of the writer.

Grade crossings are recognized by all as a grave evil, especially in large cities, and, abstractly considered, you will find every one in favor of their abolition. Most serious and distressing accidents occur on them, especially where they are used by street cars. Expensive and vexatious delays to both railway and highway traffic are an ever-occurring result of their presence. Protection in the form of gates and watchmen must be furnished, the crossing must be maintained and kept clean, items which in themselves represent the interest on a no inconsiderable investment. Their abolition will permit the railway to run its trains through the city at full speed, perform its switching service without interference from street traffic and give it better control over its right-of-way on account of the lessened opportunities for trespassing.

The benefit to the public is fully as great, if not greater. The street railway, if there is one on the crossing, also shares in the benefits not only by obtaining greater safety and quicker transit for its passengers, but also by avoiding disarrangement of its schedules through delay at the crossing.

Grade crossings can be eliminated by placing the railway over the street, or the street over the railway. The first requires a vertical separation at the crossing of about 17 ft., consisting of 14 ft. for street headroom and 3 ft. depth of floor in the railway structure, and the second a vertical separation of 25 ft. to 26 ft., depending on conditions, consisting of 22 ft. of headroom above the tracks and 3 ft. to 4 ft. depth

*From a paper read before the St. Louis Railway Club, May, 1909.

of floor of the street structure. Other things being equal, therefore, placing the railway overhead would appear to be the better and more economical plan on account of the saving of 8 ft. to 9 ft., or from 32 per cent. to 35 per cent. in vertical separation. While 22 ft. of headroom for the railway cannot always be attained, on account of adverse conditions, good practice in most states, and the law in others, requires it because this height is necessary to clear a man standing on a box car. In no event, however, can the vertical clearance for the railway be less than 16 ft., which is still a greater vertical separation than if the railway is placed overhead. This principle is universally recognized in Chicago, where the ground is practically level, where all railways are overhead, and where they speak not of grade separation, but of track elevation.

EFFECTS OF CHANGE IN RAILWAY GRADE.

These naturally group themselves under the following heads:

1. Probable increase in maximum gradient and its effect on the efficiency of the road.
2. Effect on railway improvements, such as depots, water and fuel stations, interlocking plants, switching yards, etc.
3. Effect on industrial tracks, buildings and other property adjoining the right-of-way. The last two items are sometimes of serious import, as a material change in grade may involve the almost complete destruction of improvements costing large sums of money.
4. Provisions for draining the right-of-way cannot be overlooked and must be given due weight in any plan of grade separation, sometimes at a considerable outlay of money.
5. Damages on account of change in grade must be paid to any one who is injured thereby.
6. The plan proposed for the crossing under consideration may seriously affect a proper solution for adjoining crossings which makes it necessary at time to consider a series of crossings as a unit.
7. Grade separation on the existing right-of-way may involve so much expense and such unsatisfactory results that a new line, for which right-of-way must be acquired, is the only solution of the difficulty.
8. Due regard must be had for the future development of the railway.
9. Care must be exercised so that the railway will have the proper side and vertical clearance along its tracks.

EFFECTS OF CHANGE IN STREET GRADES.

1. If the grade of the street is changed, a reasonable gradient must be secured; if it is too steep, great expense and inconvenience result to those using the street. Opinions differ as to what constitutes a reasonable grade, but I believe I am safe in saying that any slope with less than 4 ft. rise in a hundred feet comes within that definition.
2. Abutting damages on account of change of grade on the street are a prolific source of expense in the abolishing of grade crossings.
3. Right-of-way must be required for approaches along the street for highway structure and great skill can be shown in their proper location and design. These last two items frequently amount to as much as the construction cost, and in some cases makes an otherwise acceptable plan prohibitive in cost.
4. Frequently a proper solution requires a new location for the street. This is the case when, for example, it is found desirable to consolidate two streets and make one crossing serve for both. When it is done with discrimination and good judgment, the results are satisfactory to all.
5. A change in the grade of the street forming the crossing may affect other streets in the vicinity.
6. Most streets have sewers, water pipes, gas pipes and other ducts under them. Relocation or change of grade of these cannot be lightly passed over, as work of this kind runs into money rapidly.

7. The same attention to the details of drainage, future development and clearance given to the railway right-of-way must be accorded the street, because without a proper regard for these features satisfactory results cannot be obtained.

FORM OF STRUCTURE.

If the railway is placed overhead, a structure must be designated of sufficient capacity to take care of the railway facilities for which it is required. At the same time, ample space must be left underneath to take care of the street traffic in an acceptable and up-to-date manner. A structure for this purpose usually consists of retaining walls along the building lines of the street upon which rest spans, either of steel or some other form of permanent material. The details of construction will vary according to conditions, such as the importance of the street and railway, the location, whether in a manufacturing or residence district, and the consequent degree of elegance and the ornamentation desired in the work. If the street is placed overhead, a structure must be designed of sufficient capacity to take care of the street traffic for which it is required. Ample space should be left below to meet the requirements of the railway. A structure for this class of crossings usually consists of two masonry approaches with steel spans of varying length between. A structure of this kind is also constructed with varying capacities and ornamentation depending on its importance and on the district within which it is located.

COST.

We now come to that feature of the problem which is the prime factor in preventing and delaying its solution. In nearly every case in large cities, an average of a hundred thousand dollars or more is required per crossing. The elements that go to make up this cost may be roughly divided as follows: Preliminary expenses, land and other damages, grade changes, construction, interference with traffic, maintenance, miscellaneous expenses.

DIVISION OF COST.

Where an improvement is required that will benefit a number of interests jointly, equity requires that each pay in proportion to the benefit received by it. It is unjust, to force one of the parties benefited to pay the entire expense. I contend, therefore, that the city, or state and city, the railway and the street railway, if any, using the crossing, should divide the expense on some equitable and just basis; what that is, I am not prepared to say, except that it should be on the basis of percentages of the entire cost of the work and not along the line of each interest paying for certain special items, such as land damages or special features of construction. The work is a unit and the expense entailed should be treated and divided as such. In arriving at a proper basis for the division of an expense of this nature, knowledge of what is done in other places under similar conditions is of value. I therefore made some investigations of what is being done in other states.

Massachusetts has always taken advanced ground in such matters, and through long experience has succeeded in establishing a more equitable regulation and control of its corporations than any other state in the union. Since 1890, under the control of the railway commissioners a systematic plan for the abolishing of grade crossings has been carried out, so that at present this state is freer from dangerous grade crossings than any other.

Up to June 1, 1907, there was spent in that state for the elimination of grade crossings \$29,221,380. The railways paid approximately 60 per cent., the state 26 per cent., the cities and town 14 per cent. and the Metropolitan Park Loan Fund a small amount. The state of Massachusetts and the city of Boston, at the time that the Boston South Terminal station was built, contributed towards that enterprise \$2,000,000 for the construction of retaining walls, viaducts and changes in the locations of adjoining streets.

In the state of New York, the control over the elimination of grade crossings rests with the railway commissioners and

the percentages of total cost to be paid by all interests are fixed by legislative enactment as follows:

New railways:	
Railway pays	100 per cent.
Existing railways and new streets:	
Railway pays	50 "
City pays	50 "
Existing crossings:	
Railway pays	50 "
State pays	25 "
City pays	25 "

Some years ago in Philadelphia, the Philadelphia & Reading crossed a number of streets from Broad street to Fairmount Park at grade. As this was in the heart of the city the crossings were found to be extremely troublesome and dangerous. Authority was obtained by the city to place a loan of \$6,000,000 for the work with the understanding that the railway would reimburse the city for half of the cost; in no event however, was the railway to pay more than \$3,000,000. The work was carried out and paid for as planned and has been in use for more than ten years.

About two years ago the Broadway viaduct in East St. Louis was partially reconstructed at an expense of approximately \$60,000, after negotiations extending over a period of a few months only; being just about enough time to put the proposition before all of the interested parties. The expense of this work was divided on the basis of 50 per cent. to the railways, 30 per cent. to the city and 20 per cent. to the street railway company.

These are the only statistics I could find in the limited time at my disposal, but they show that with our neighbor across the river, and in that portion of the country in which the greatest necessity exists for work of this kind and in which the most progress has been made, the principle of division of expense approximately in proportion to benefits received is given recognition.

While it is proper for the people and the legislative assemblies to decide on the policy of abolishing the grade crossings, or any grade crossing, the details necessary for the accomplishment of this result are peculiarly technical and should be put in charge of men with the proper equipment of engineering knowledge and experience.

DISCUSSION.

SAMUEL B. FISHER (Chief Engineer, M., K. & T.): In the first part of the paper it was mentioned that in Chicago it was decided to raise the railways by track elevation. About a generation ago, when I was connected with the Pittsburgh, Ft. Wayne & Chicago, it was thought then best to raise the streets, and there was quite a good deal of work done in that direction before the city took up the matter, which work was lost.

Now there are two things that are very much in favor of raising the streets: one is the fact which has been suggested in the paper, that a street grade can be made much steeper than a railway grade, and another, and perhaps more important one, is that it need not be all done at once.

In the case to which I refer, that of the Pittsburgh, Ft. Wayne & Chicago, the most frequented streets were raised, the streets that had the largest traffic, and by that means the traffic would be gradually separated, extending over a long period of time.

On the road with which I am connected they are considering the separation of the streets in a great many of the towns in the Southwest. In the Southwest the towns have nearly all been built on the summits of the hills, and in grade reductions we want to lower our grades at those points, so that naturally we are in nearly all cases depressing the track, and raising the streets.

RICHARD H. PHILLIPS (Civil Engineer): No rule as to division of cost stated in terms of exact percentage can be laid down if a proper division is to be made, inasmuch as the percentage of interest may vary in each case. There may be a crossing where there is only one steam railway track and where there is not only a heavy travel over double-track street

car line, but also a heavy wagon traffic. Now, if it were decided that the city, the steam railway and the street car line were all to participate in the cost it would be manifestly unfair to require the steam road to pay as large a share of the cost as if it had a double-track main line with one or more side tracks.

The variable conditions which bring about the necessity for grade separation at any one crossing or series of crossings, further complicates each case. The order in which the steam road, the street railway and wagon traffic has developed should no doubt, be considered. Take the case of a steam road that has acquired right of way and built main and side tracks; later the building up of a residence section further out calls for extension of the street railway and also improvement of the street over and across the railway right of way. Would it be right to force the steam road to pay as large a proportion of the cost of grade separation as where the railway built through a section already thickly populated and improvements all made?

High speed trains, either steam or electric, require grade separation, but where only slow speed is attained, great necessity for grade separation to secure freedom from accidents does not appear, the main objection being caused by impeding street traffic. At such places electric haulage, in trains of a few cars only, would eliminate the trouble.

At side tracks and spurs to warehouses, factories, etc., electric haulage would allow greater flexibility in the grades and design of switching facilities, and inasmuch as electrification of terminals has now become one of importance, it would seem that if the question of grade separation is to be broadly studied and all sections of the city considered; then the feasibility of electrification and its effect on grade crossing should be well considered.

A. P. GREENSFELDER (C. E., Fruin-Colnon Contracting Co.): In connection with the idea of track elevation, there is something more to be considered than eliminated grade crossings, for it also has a very large tendency to eliminate trespass. So that in a question of track elevation it seems that the city should bear a certain portion of the expense, as police protection, which is not now afforded railways but should most certainly be extended them. The railways in such track elevation are naturally benefited by the elimination of watchmen and crossing gates.

PENSIONS ON ROCK ISLAND LINES.

A pension system for their employees has been adopted by the Rock Island lines, effective January 1, 1910. In issuing the announcement of the adoption of the plan, President Mudge said:

"The system adopted calls for no contributions from the employees themselves. The company hopes by thus voluntarily establishing a system under which an income will be assured * * * to build up among them a feeling of permanency in their employment, an enlarged interest in the company's welfare, and a desire to remain in and devote their best efforts to the company's service."

The administration of the pension department will be by a board of pensions with office in Chicago. The board has been organized with the following members: E. S. Moore, fourth vice-president, chairman; F. O. Melcher, second vice-president; W. S. Tinsman, general manager; W. A. Nettleton, general superintendent of motive power; Frank Nay, comptroller. W. B. Ross has been elected secretary.

The rules are similar to the well-known rules of the Pennsylvania and the Chicago & North Western, but with some significant differences. Where an employee has served jointly for Rock Island Lines and some other railway or express company, the Board of Pensions will decide the amount of

the employee's monthly pay that shall be used in determining the pension allowance.

All officers and employees who have attained the age of 70 years will be retired. Locomotive engineers and firemen, conductors, flagmen and brakemen, train baggagemen, yardmasters, switchmen, roadmasters, bridge foremen and section foremen, who have attained the age of 65 years, may be retired. Such as have been, at date of retirement, 20 years continuously in the service, shall be pensioned. Officers and employees who have been 25 or more years continuously in service, and who have become permanently incapacitated, may be retired and pensioned, regardless of age. Leave of absence, suspension, dismissal followed by reinstatement within one year, or temporary lay-off on account of reduction of force, is not to be considered as a break in the continuity of service. In no case shall the allowance for employees whose entire time has been given to the Rock Island be made less than \$20 nor more than \$150 per month.

In calculating the period of service upon which the pension allowance is based, the broken period following the completion of a year when it is less than six months, shall not be counted; when it is more than six months, it shall be counted an additional year.

No regular sum will be set apart as a pension fund. The amount required will be charged out each month to operating expenses.

No person inexperienced in railway work over 35 years of age, and no experienced person over 45 years of age, shall hereafter be taken into the service [with the usual exceptions].

GAGE REPAIRS.

BY ALLEN G. WOOD.

Some form of test apparatus or pump is absolutely necessary for successful repairing and adjusting of gages. If you wish to buy a test apparatus, send for catalogue to several reputable gage manufacturers and then make your selection. If you wish to make a test apparatus the following suggestions are practicable.

The most popular form of test apparatus and probably the most practical, is the plain water pressure pump made of a piece of pipe with a stuffing box on the end and a threaded plunger with a hand wheel.

If, however, you have water pressure convenient, and of sufficient pressure, run a $\frac{1}{4}$ -in. pipe to your repair bench and branch at the end with two $\frac{1}{4}$ -in. male pipe connections, about 10 in. apart and standing about 3 in. above the bench. In the supply pipe, convenient to your left hand, put a common brass cock with a lever handle. Before placing the cock remove the plug or key and file a long narrow notch on the plug from the hole about one-quarter around the plug, and another notch on the corresponding opposite side of the plug. Solder a lever (a piece of $\frac{1}{4}$ -in. brass wire 6 in. long will do) on to the handle of the cock, or screw it into the end of the handle. Put a little sweet oil on the plug and put it in place, having the cock tight but free.

Put a test gage, which you know to be accurate, on one of the $\frac{1}{4}$ -in. connections, and also attach a small cock near this for relieving the pressure. The apparatus is then ready. Place the gage, which you wish to test, on the connection or stub at the left, and carefully open the cock by means of the long handle. The notches which you have filed on the plug will allow the water to enter gradually, and the long lever allows a more steady control of the cock. When you have finished the test close the supply cock and open the small relief cock slowly so as to release the pressure gradually.

A reliable test gage is absolutely essential, and can be obtained from any reliable maker. In order to always feel confidence in your test gage, test it by means of several new gages whenever they pass your hands.

It is fair to assume that a reputable maker sends his gages out correct, but they are liable to accident in shipment. They are not liable, however, to all become inaccurate in the same degree. Therefore if you obtain say a half dozen new gages and your test gage agrees with all, you are pretty safe in assuming your test gage to be correct. When you are doubtful about a new lot of gages, take off your test gage, substitute one of the new lot and then test the others by it. By transposing, it is soon evident where the fault is. Send your test gage to the maker for cleaning and adjusting at least twice each year, and oftener, if occasion demands.

Setting the pointer at zero will not make any gage correct. The two prominent types of gages are the "Capsular" (commonly called "diaphragm") and the "Bourdon." To adjust a Capsular gage proceed as follows: To make the hand move faster over the first part of the circle the end of the long lever, which extends across the face of the spring must be bent down at the left end (as the gage faces you.) To make the hand move faster over the last part of the circle bend the same end of the same lever up. To make the gage register less (or faster) through the whole circle, move the tongue of the sector to the left. To make it register more (or slower) through the whole circle move the same tongue to the right.

To adjust a Bourdon gage loosen the screw which holds the adjusting strap, and by sliding this strap backward or forward the hand is made to travel faster or slower as the case may be. In any gage when the segment or pinion has become worn so that there is too much play remove the segment, lay it on a bench block and tap lightly with a pene hammer between the shaft end and tooth end so as to elongate it enough to take up the slack. Never "dip" a movement in acid to clean it unless you take it apart and thoroughly remove all traces of the acid with soda water. The "dipping" of gage movements is not recommended.

To oil a movement use only the best clock oil, which can be obtained from any reliable gage manufacturer. Cheap oil will gum. Keep the oil in a small vial well corked and provide a small slim hard wood stick with a pointed end. One drop of good clock oil is sufficient for an entire movement, and too much serves to collect dust.

Handle hair springs with tweezers. Do not coil them too tight but tight enough to take up the "back-lash." Do not strain a movement to coil the hair spring. Loosen the movement, coil the spring by means of the center spindle, then put the segment in gear and replace the movement. Don't use a rusty hair spring and never polish one—use a new one—it's cheaper in the end. To put on a hair spring set the center spindle in a hole in a bench block and drive the hair spring in place with a hollow set. If the hair spring has no hub, put the end through the spindle and fasten by driving the point of a common pin in the same hole, then cut off the pin with nippers.

To put in a Capsular Main Spring.—Put a little red lead on the stem of the spring, screw it in with the fingers, then insert a square drift through the steam hole of the gage so that the square of the drift will enter the spring stem, care being taken that the drift does not reach through to the top head. Tap the end of this drift with a hammer and turn it until the spring is screwed down to its place. Remove the drift and drive a taper punch (or "set") into the hole, rotating it with the fingers as it is tapped lightly with a hammer. The stem being expanded is then tight. Submit the gage to water pressure enough to throw the hand completely around the dial and repeat several times until the "stretch" is taken out of the spring. Any spring should be "stretched." Do not attempt to solder a leaky spring, as it is only a waste of time, and takes the temper out of the spring. The band of the Capsular Spring is elastic as well as the heads.

The prevailing trouble with Bourdon springs is splitting or cracking on the edges, and the common error of most re-

pairmen is to solder this leak. Do not do it. Put in a new tube.

To set a pointer or hand first put 20 lbs. pressure on your gage, set the pointer at 20 lbs. and touch it lightly with a light hammer. Then put in 40 lbs. and "set" the pointer with a small hollow set and a light hammer, then run up to 60 lbs. or more to make sure that all is right and especially try standard running pressure before taking the gage off. If the hand does not register correctly then adjust the movement in the manner already described. To remove a pointer use a pointer puller or "jack," which is intended for such work. Do not pry it off with a screwdriver, because by so doing you strain the movement and bend the spindle.

Do not use too much red lead. Remember that a gage is a delicate instrument. Gages should be connected so that dry steam cannot enter, as it will damage the spring. If the pipe to the gage enters the boiler below the water line it is safe, otherwise a siphon or trap should be connected under the gage. The form of siphon in general use consists of a pipe bent upon itself and commonly called a "pigtail." Another form which is reliable and especially adapted for use where the space below the gage is limited consists of a pipe bent in a circle a little larger than the gage case, and slipped over the gage, one end leading to the gage and the other to the boiler. A gage cock should always be opened slowly so as not to produce a "water-hammer" or its equivalent.

SECOND ANNUAL REPORT OF THE BLOCK SIGNAL AND TRAIN CONTROL BOARD TO THE INTER-STATE COMMERCE COMMISSION.

This board, M. E. Cooley, Azel Ames, F. G. Ewald and B. B. Adams, was appointed on July 10, 1907. Its function is to investigate and report to the Commission upon the use of and the necessity for appliances and systems for the promotion of safety in railway operation, including the making of any necessary tests. Its first annual report was made November 20, 1908. An informal report had been presented one year before; and still further back (Feb. 23, 1907) railway signaling had been made the subject of a special report by the Commission. November 20, 1908, we reported having examined the plans and specifications of 371 devices, of which 184 had been reported on, and of which 12 had been considered to possess some merit. Of the 12, one was installed and ready for test, and the proprietors of four others were making preparations. The report gave information concerning the use of the block system on the railways of this country and England; the use of cab signals in England and in France, etc.

This past year the time of the members has been taken up mostly in examining plans and drawings of inventions and, in some cases, models. As in the previous year, nearly all of the propositions laid before the board were lacking either in merit or novelty. A very large proportion of the inventors were unfamiliar with the conditions which have to be met in railway practice, as well as with the state of the art of that department of railway operation with which they dealt. This year, as last, much of the time of the members of the board has been taken up by interviews with inventors and proprietors of inventions; and, as will be understood from what has just been said, the amount of time and patience demanded by these interviews has usually been in inverse ratio to the value of the invention which was the subject of discussion. When the first annual report was submitted a number of proprietors of inventions had presented applications accompanied by statements that they expected to have installations of apparatus ready for inspection by the board at an early date; and on the basis of these statements this report should have contained mention of a number of installations ready for test. Still other inventors and proprietors

have persistently urged the board to an early decision on the merits of their plans; but the fact is that only one installation is actually ready for test under government supervision. Some of these applications which the proprietors have not diligently followed up concern plans which were approved by the board two years ago.

One mechanical trip automatic stop (the Rowell-Potter device) has been tested by the board. This was on the lines of the Chicago, Burlington & Quincy Railroad, and the tests were continued from December 4, 1908, to April 30, 1909. One other automatic stop, the overhead mechanical trip of Mr. S. H. Harrington, has been in experimental use on the Northern Railroad of New Jersey, a subsidiary of the Erie Railroad, during the past year. This apparatus was not formally brought before the board until recently, Mr. Harrington having taken the commendable course of testing his device thoroughly before asking this board to consider it. The board is preparing to test this apparatus during the coming winter.

Extended inquiry has been made into the conduct of the manual block signal stations and the telegraph offices on a considerable number of the principal railways of the country; this with a view to gaining information as to the efficiency and character of the men employed in these departments of the railway service. Incidentally to this inspection, information has been gathered concerning experience with telephones on those roads which have introduced telephones in the place of the Morse telegraph for the communication of train orders from the despatcher's office to the stations along the line; and in the next statistical report of block-signal mileage on the railways of the country it is proposed to include a statement of the mileage of road on which telephones are used for sending train orders. Information has been gathered concerning the use of the "A B C" despatching and block system used on the Northern Pacific Railway.

Outside of the signaling and train-control field the board has investigated (a) the subject of locomotive ash pans, which, after January 1 next, will be subject to inspection by the Interstate Commerce Commission in accordance with the provision of the "ash-pan law," making it unlawful to use any locomotive not equipped with an ash pan which can be dumped or emptied and cleaned without the necessity of any employee going under such locomotive; (b) air-brake devices and numerous proposed improvements in air-brake couplings and other details; (c) wheels, for cars, designed to revolve independently of the axle; (d) various other proposed improvements in cars; (e) numerous designs of joints, fastenings, and other proposed improvements in rails; (f) metal and composite ties for track, and arrangements for fastening rails to metal ties; (g) the use of titanium in rails, and (h) miscellaneous proposals for the promotion of safety on railways.

Taking a statistical view of the work accomplished, it appears that since the organization of the board, plans and descriptions of inventions designed to enhance the safety of railway operation have been submitted for consideration to the number of 835. At the time the board's first annual report was made 184 files had been examined and reported upon; since that time 327 files have been examined and reports thereon transmitted to the proprietors. Of the 327 files considered during the past year, 12 have dealt with inventions held by the board to be of such character and to possess such a degree of merit as to warrant the board in conducting tests of them if satisfactory installations for that purpose are offered by the proprietors. Fourteen others were considered to be conceived on right principles, but because they were not primarily designed to promote safety, or because for various reasons the public interest did not seem to require it, the board has not felt justified in devoting time to test them or to conduct further investigations in regard to them. The board has disapproved 303 devices, either as being unsound in

principle or design, as not being adapted for use under present railway operating conditions, or as not being sufficiently developed. The board has in its possession plans of approximately 227 devices which now await its attention. A number of inventors and proprietors have as yet not furnished complete plans and specifications of their devices. The board has held monthly meetings usually at Washington.

Following this introduction the report takes up the different subjects more at length. Under the head of manual block signaling it is stated that block signal and telegraph offices have been inspected on many roads; and poorly qualified telegraphers are found on a number of important roads. Inefficient management has been found in dispatchers' offices. Lack of experience, observed to some extent in telegraph offices, is even more marked in some cases where the telephone has taken the place of the telegraph. While the reports of the inspections are not given in detail, "ample evidence has been found of the need of improvement." A list is given of 19 serious collisions occurring during the year ending June 30 last, due to errors or neglect by telegraphers. The A B C system of dispatching and block signaling is discussed quite fully, and reference is made to two collisions which have occurred under that system. The report does not attempt to formulate a precise estimate of the merit of the system for the reason that the board has not fully informed itself as to the quality of the discipline which has been employed in its operation.

Under the head of controlled manual signaling the report refers to the abolition of this system in favor of automatic signaling on the New York Central and on a branch of the New York, New Haven & Hartford. The Illinois Central, which discontinued the use of controlled manual on single track early in 1908, continues to operate those lines without the block system; this because of the large increase in wages that would be necessary under the nine-hour law for signalmen.

Automatic Stops.—The board has tested the Rowell-Potter apparatus on the Chicago, Burlington & Quincy and says that if certain faults which are named were remedied, and if the apparatus were well inspected and maintained, the system would be safe and reliable, and its use would tend materially to promote safety of operation. The report on this subject is dealt with in an appendix, consideration of which we must postpone to a future issue.

The board is about to appoint a regular inspector to watch the operation of S. H. Harrington's automatic stop on the Northern of New Jersey. This is an overhead device suspended 15 ft. above the track in such a way as to strike an air-brake valve fixed on the top of the locomotive cab.

Cab Signals.—The report gives a record of the operation of cab signals on the Great Western of England similar to that which was published in the *Railroad Age Gazette* of August 20 last.

Ash Pans.—Preparatory to the enforcement of the ash pan law, which goes into effect January 1, 1910, the board has gathered statistics from all of the principal roads of the country, from which it appears that practically nine-tenths of the locomotives were equipped or would be equipped by the beginning of 1910 with ash pans which can be cleaned by a man standing outside the rails (or on the engine), and which thus comply with the law. In a report by George L. Fowler, printed as an appendix, the board gives descriptions, with drawings, of the principal types of apparatus for emptying ash pans.

Miscellaneous Devices.—The board has investigated the St. Clair air-brake, in which a heavy coil spring is used to store power for the application of brakes. Experiments a year ago had given grounds for the expectation that this brake was a useful invention, but in a test of a 50-car train in Colorado last July it was found that the St. Clair brakes would not

work properly in connection with the Westinghouse brakes in the same train and the test had to be abandoned. The board thinks that the St. Clair brake would work well in a train by itself. Automatic connectors for air, steam and signal hose are in use on several roads (the Long Island and the New York Central in particular); but the board has taken no action concerning inventions of this kind, although a number of parties have asked it to do so, because of various difficult questions as to the details of these devices which have not yet been answered. The board has been asked to approve "loose wheel" inventions, like the Miltimore of 30 years ago, but it rejects them, and, to sustain its position, gives a history of the Miltimore experiments.

CONCLUSIONS.

The board has given all proper encouragement to every proposition that has been brought to its attention which has appeared to be useful or to embody reasonable hope of being useful for the promotion of the safety of railway travel or railway operation. In the investigation of automatic train control the results have been meager, because (except in the two cases mentioned) no one has seen fit to expend the very large sums of money that would be necessary to build and install apparatus for making satisfactory tests of inventions of this class. This board has no authority to spend money for apparatus and cannot, therefore, expedite the development even of the devices which it has approved for test. The main features of this branch of the art of railway operation are pretty well understood, and, aside from making tests in accordance with the law and reporting the results thereof, there is little that the board can do concerning it. The thing needed is experience in severe service. There are as yet no extensive permanent installations which will afford this experience.

The board, therefore, is not at this time prepared to make a definite and positive recommendation for the use of an automatic stop in connection with the block-signal system. It is reasonable to expect, however, that when the systems which have been approved by the board for test have been subjected to severe trial under service conditions and have had any faults which such tests may develop corrected, it will be found that several forms of automatic train-controlling devices are available for use. The art of automatic train control, like the art of signaling, must be developed by those most intimately concerned in its use, namely, the railways themselves. It is not to be expected that trials or tests conducted by the government will, independently of extended use by railways, result in the production of devices or systems fully developed to meet all the exacting conditions of railway operation. The real value of any mechanism can only be demonstrated by its extended use in the place and for the purpose intended. The government, under existing law, can do little more than eliminate those devices and systems which are obviously unsatisfactory, present in concise form such information as it may gather in regard to the question, and indicate through the published results of examinations and tests a line of effort which it is believed will, if followed by the railway companies themselves, result in the practical development of automatic train control to a point where it will at least serve materially to diminish the woefully large number of accidents which might be prevented by the use of reliable automatic train-controlling devices.

In block signaling proper no important new propositions have been brought out, except the A B C system (and that has been investigated by the board on its own motion), and the only action taken has been such as was deemed necessary to keep informed concerning the practice of the railways generally in this respect. As has been stated, the practice in "telegraph" or manual block signaling is in many places open to criticism. For the correction of this unsatisfactory practice the most feasible governmental measure is the establishment of regular supervision over all interstate carriers in this

respect. This has been heretofore advocated by the Commission and has been embodied in bills presented in Congress to enforce the use of the block system and to investigate train accidents. By the passage of these bills the way can be opened for the establishment in this country of the very praiseworthy methods in signaling and in other features affecting safety which are in vogue in Great Britain, and which have produced the remarkable freedom from accidents recently recorded in that country.* These safety measures were epitomized on page 69 of our last annual report, those pertinent to our present purpose being:

1. Careful selection and thorough training of block signalmen.
2. Constant, regular and thorough inspection of manual block signal operation and methods.
3. Proper inclosing of railway tracks, together with the enforcement of laws against trespassing thereon.
4. The payment of pensions by railway companies to their superannuated employees.
5. The compulsory use of a space interval in train operation.

The first two of the foregoing heads have been touched upon. The third, the question of dealing with trespassing, is less directly connected with train operation; but with 5,000 or 6,000 trespassers killed on the railway tracks of the United States every year, the non-enforcement of the laws against trespassing must be looked upon as a crying evil, demanding

*In the year 1908 (as in 1901) no passenger was killed in a train accident on any railway in the United Kingdom, and only 6 employees were killed in such accidents.

the attention of every governmental agency that has any power in the premises.

The payment of pensions undoubtedly tends materially to enhance safety by promoting contentment among the employees. By fostering the feeling on the part of the employee that he has a permanent interest in the company's welfare, good discipline is promoted. There is probably no one factor so important to the safety of railway operation in this country at the present time as the promotion of good discipline among employees. Excellent results have manifested themselves from the operation of the pension system on the Pennsylvania Railroad and on the Baltimore & Ohio, and the board notes with satisfaction that the companies embraced in the "New York Central Lines" have recently decided to pay pensions to their employees.

The reasons why the use of the block system should be enforced by law have been set forth in previous reports, and scarcely need repeating. Progress is being made by a number of important roads, but that progress is very irregular. In some cases the block system has been abandoned. A principal feature of the bill which has been before Congress is the provision for governmental supervision of the operation of the block system. Only by such comprehensive supervision will it be possible adequately to deal with the defects in manual block signaling, which have been pointed out in this report, or to secure the full information which the public should have, concerning manual block signaling, automatic block signaling, interlocking of switches and signals, and train operation generally.

RAILWAY OFFICERS ON THE 1910 OUTLOOK.

The following answers to our circular letter of inquiry on railway conditions throughout the country are printed in the usual form. We classify them geographically, but have agreed in each case to protect the identity of the writer.

QUESTION 1—HOW DOES THE GENERAL OUTLOOK FOR 1910 APPEAR TO YOU, COMPARED WITH THE OUTLOOK A YEAR AGO AT THIS TIME, AND WITH THE NORMAL OUTLOOK IN YOUR TERRITORY? DO YOU CONSIDER THAT THE IMPROVEMENT IN CONDITIONS IS GOING TO CONTINUE RAPIDLY?

Answers from Roads in Central West, and Trunk Lines.

Road A.—The general outlook is better than at a corresponding period the previous year, but the improvement from this time forward will be of a gradual and not a rapid nature.

—President.

Road B.—The general outlook is quite favorable, the increase in business from all sources being steady and indicative of continued prosperity. Reports from our various local traffic representatives and agents are uniformly optimistic and we are of the opinion that conditions will continue to gradually improve until the producing capacity of the various industries is reached. There is also considerable activity in improvements and extension of existing plants, which will tend to increase the tonnage of the carrying lines.

—Receiver.

Road C.—The general outlook for the coming year, as compared with a year ago at this time, is certainly very much improved. With respect to normal conditions in this territory, it is very encouraging. The indications are that the improvement is going to continue.

—General Manager.

Road D.—The general outlook for 1910 in our territory is much more favorable than a year ago, in fact, conditions are about normal. All industrial concerns on our line are now actively engaged, including the iron furnaces.

—Assistant to President.

Road E.—General outlook for 1910 appears all right. The

lumber market is not good and there will be less logging but other business will make up any loss on logs and lumber.

—Vice-President.

Road F.—The increase in general business, which was anticipated at this time last year, was realized to some considerable extent. It came gradually, and I think will continue during the year 1910, although there may be more or less fluctuation. As a matter of fact, I think at the present time general business is showing some decrease as compared with a few weeks ago, but do not think it will be permanent, and that possibly, as above stated, a gradual increase will continue.

—President.

Road G.—From present indications the coming year seems to give promise of general prosperity throughout the country in all lines of industry. The improvement in present conditions, which set in rather slowly about a year ago, has been gathering headway more and more rapidly as time went on, until, within the last two months, it has become a question of whether or not it has gained greater momentum than can be permanently maintained, and it is hardly to be expected that the same rate of improvement will continue indefinitely. It would seem reasonable to suppose that the past history of business revivals following times of financial depression will be repeated at this time, and that we may expect in the next two or three months to find the progress of industrial activity somewhat more moderate; not necessarily developing into a retrograde movement, but merely a slowing up of the present rate of increase. It is sometimes not fully realized that the facilities of the country in all lines of industry have been vastly increased in the last few years, so that the same amount of business and manufacturing which was done three or four years ago, only at the expense of great effort and much inconvenience, can be handled to-day without even employing all of the present-day facilities, and if the industrial resources of the country are not being put to such a severe strain as was the case in 1906 and 1907, it is not because the same amount of work or even more is not being done to-day, but

simply that it is being done more easily. Generally speaking, therefore, I am inclined to think that the industrial prosperity for the year 1910 will probably be fully equal to, if not in excess of, what might be expected from the normal growth of the country. —President.

Road H.—The general outlook for 1910 appears to me very much brighter than a year ago. I believe the improvement in conditions is going to continue for some time.

—President.

Road I.—Having passed through the year with business improving steadily, there is now, generally speaking, greater confidence in the future prospects than existed at this time last year, and the general outlook for 1910 appears to be very much better than it was a year ago. My opinion is that the improvement in conditions will be steady and do not look for any noticeably rapid improvement. —General Manager.

Road J.—The general outlook for railway tonnage and earnings for 1910, in the region traversed by our line, is not more encouraging now than it was a year ago for 1909. Much depends on weather conditions during the winter and spring, and freedom from labor agitations. At present the local outlook is a little less than normal. In my opinion, if there is to be further material improvement in conditions it will be due to slow and natural growth and sane and conservative methods in every direction. We ought not to go to the limit of our strength as we go along, but should foster a reserve force, for possible—and quite probable—future emergencies.

—General Manager.

Road K.—The general outlook for 1910, compared with outlook for a year ago at this time, is most encouraging, especially in view of the fact that large increases in orders for equipment have been made by many of the railway companies, which insures very great activity in the locomotive and car shops throughout the country for several months, if not at least a year to come. All of this contributes directly to the business of all lines. Also, compared with the normal outlook in our territory, we do not anticipate any rapid continuance of improved conditions as now upon us. We believe the experience of the past two years has rendered everyone more cautious, and prosperity is not looked upon as such a sure thing now as it was three years since. —General Manager.

Road L.—I am disposed to be optimistic regarding the general outlook for 1910. The West has been favored with an abundance of crops, for which the farmers have received good prices. The industries, generally speaking, throughout the country are working to more than their normal capacity, and the outlook is encouraging for industrial development. Our territory is largely agricultural and there is more grain and live stock in the hands of farmers than ever before. These products will move to market in the earlier part of the approaching year.

—President.

East—Answers to Question 1.

Road A.—The outlook for 1910 appears good, compared with conditions a year ago, and with normal conditions in this territory, I think the improvement will continue to be rapid.

—President.

Road B.—The general outlook for 1910 we regard as most promising, and indications now are that the business of that year will probably exceed any previous one in the history of the railways of this country. As to whether the improvement in conditions that has already been experienced is going to continue rapidly during the coming year seems to us doubtful. There was no general liquidation as a result of the panic of 1907. Such as there was pertained more to financial affairs of a speculative nature than anything else. There was undoubtedly temporarily a substantial liquidation on the part of holders of railway securities, as also those of industrial enterprises more or less dependent upon the prosperity of the railways for their business and success. The shrinkage in values due to this liquidation has in almost all cases been more than

recovered, and in many the prices of securities are on a higher basis than they were in October, 1907. In both railway and industrial enterprises, therefore, no real liquidation has resulted from the panic of 1907, as in addition to the recovery in value of the railway and industrial securities, several hundred millions of new securities have been put out by these companies. To a considerable extent these new securities do not represent any additional value above the present market prices of stocks and bonds outstanding previous to October, 1907. As to the valuations of all other commodities of every kind, also as to labor, there has been no liquidation whatever that affected the prices of these; they are now on a higher basis than ever before and still advancing with great rapidity. It does not seem to us, therefore, that these conditions can continue indefinitely, much less be further inflated, as seems to be desired in various directions and as must necessarily result from a continuation of the improvement in conditions on the same scale as has occurred during the last six months of the year 1909.

—President.

Road C.—There is every indication that there should be a steady development of business during the year 1910.

—General Manager.

Road D.—The general outlook for 1910 in this territory is very bright indeed, and is better and more substantial than it was one year ago. We consider that the improvement in conditions is going to continue very rapidly.

—President.

Road E.—The general outlook for business in our territory for the coming year is much more favorable than it was twelve months ago. It is rather early to say how rapidly conditions are going to improve, for the reason that a large volume of our traffic is slate and cement, and the shipment of these commodities will depend largely upon the building construction during the next summer; but the general impression seems to be that shipments are going to be fairly heavy.

—Vice-President.

South—Answers to Question 1.

Road A.—The outlook is better, although I do not know what effect the President's message as to railway legislation will have. General conditions are much better than for the last five-year period. I think conditions should improve, but not rapidly.

—General Manager.

Road B.—General outlook for 1910 appears very bright, far ahead of last year. I believe that conditions will continue to improve rapidly.

—Receiver.

Road C.—The outlook in this section of the country for 1910 is much brighter than a year ago. Business is good, with probabilities for a continuance. A fairly good crop of cotton in central and southern Georgia and high prices has stimulated business very materially.

—Vice-President.

Road D.—The general outlook for 1910 appears to be very bright, and while I cannot say the improvement in conditions will be rapid, I think there will be steady improvement, and early in 1910 will reach normal.

—President.

Road E.—The general outlook for 1910 is encouraging, and the indications are that we will have much better business than we had for the previous year.

—President.

Road F.—General outlook would indicate an increase in business of at least 18 per cent. as compared with the outlook same period last year. Owing to the amount of money made by shippers on our line in cotton, etc., we will have a heavy fertilizer and truck movement. Therefore, I consider that the improvement in conditions is going to continue rapidly.

—General Manager.

Road G.—The general outlook for 1910, as compared with a year ago, is better, but I do not consider that the conditions will improve rapidly, on account of every business man being more conservative.

—General Manager.

Road H.—The general outlook for 1910 appears very much brighter than did the outlook at this time for 1909. The pros-

perity in this section of the South is very marked, and I look for a general improvement in all lines of business.

—Vice-President.

Road I.—The general outlook for 1910 in our territory is encouraging. Fundamental business conditions are sound. Financial institutions are generally in excellent condition. While the cotton crop as a whole has been short, a large part of the shortage has been west of the Mississippi river. In the more easterly states the yield has been fairly large and the farmers have received the full benefit of the increase in price resulting from the total shortage. The high average of agricultural prosperity thus brought about will benefit both wholesale and retail trade. Industrial enterprises in the South generally passed through the period of business depression without disaster. Most of them are now working at their normal capacity. Some are increasing their plants and a considerable number of new industries are being established. Cotton mill production has been curtailed somewhat owing to the failure of cotton goods to advance in price in proportion to the advance in the price of cotton. This is a temporary condition which will be adjusted by the law of supply and demand. I see no reason why the improvement in conditions should not continue.

—President.

Southwest—Answers to Question 1.

Road A.—Outlook for 1910 is favorable for Arizona generally, and I believe the improvement will continue steadily.

—President.

Road B.—On account of the large amount of immigration into this part of Texas, principally from the northern states, and the consequent rapid development of the territory traversed by this railway, and the contiguous territory, the general outlook for business is better than a year ago; at the same time it may be said that as the earnings of this company depend, directly and indirectly, in a great measure, upon the cotton crop, and it will be impossible to estimate the condition of this crop much before June of next year, the expectation of business for the year 1910 cannot be predicted before that time.

—Vice-President.

Road C.—The general outlook for 1910 is much better than a year ago, and in my opinion will be much better than the normal outlook in this territory. I consider that the improvement in conditions in this territory will continue rapidly. This section is dependent, to a very large degree, to its prosperity and improved conditions in the production of agricultural products. We have had good crops, and although a short cotton crop this year, the price more than makes up the difference to the producer.

—Receiver.

Road D.—The general outlook for 1910 is good with us.

—Vice-President.

Road E.—Conditions in our territory have not yet reached a normal state. The outlook is much better for this time in 1910.

—Vice-President.

Road F.—A large portion of the railway traffic in this section being dependent upon the crops, it is not possible at this time to predict for 1910. There does not seem to be any reason why improvement in conditions in this territory should continue rapidly. If it continues at all it will be gradual.

—Vice-President.

Road G.—The general outlook for 1910 as it now appears: We will have a good business during the entire year, providing the coming session of Congress does not make some laws that will cause a lack of confidence and withdrawal of capital.

—General Superintendent.

Road H.—I feel that we have every reason to believe that the business of 1910 will be fully normal, in that it should reasonably be as large as any year's business which we have ever handled, provided that the crop conditions, which at this time are very promising, should materialize. The business in this particular territory has for the past four or five months been on practically the 1907 basis, and I do not anticipate

a rapid improvement above that point, but that from now on the betterment will be gradual.

—Vice-President.

West and Transcontinental—Answers to Question 1.

Road A.—Conditions in Nevada are about the same as one year ago. There will be probably a healthy, slow growth during the coming year.

—Vice-President.

Road B.—While it is too early to predict conditions so far as they may be affected by the volume of next year's crops, the business outlook is generally favorable in most of the territory traversed by our lines, and we would regard it as better than last year at the same time. We expect a substantial and gradual rather than a rapid progress. Among the factors leading to improvement may be mentioned the extensions of railway facilities into new sections, large development of agricultural lands in southern Idaho, opening of new territory through reclamation projects, progressive colonization of lands in California, including the protection of large land areas against floods and a general improvement in trade conditions.

—Vice-President.

Road C.—In our territory the general outlook for 1910 is better than it was a year ago, and equal to any year in the history of this company. There has been a good agricultural production in all the states; the country banks all have money, and the people generally are prosperous. I look for good healthy business during 1910, and that the development of this country will go forward during that year, and that there will be a large settlement of unoccupied lands.

—President.

Road D.—General outlook for business is good. I think business conditions are going to improve quite rapidly.

—President.

Road E.—The general outlook for 1910 does not differ very greatly from that of a year ago or the normal outlook in my territory. If there is any change, however, it is favorable rather than otherwise. Conditions have been improving steadily in this territory for the past few years and should continue to improve at least as rapidly as they have been doing.

—General Manager.

Road F.—The general outlook appears to me to be better than a year ago at this time, and better than the normal outlook in our territory. I consider that the improvement will continue for some time, perhaps not rapidly.

—Chairman.

Canada—Answers to Question 1.

Road A.—The general outlook for 1910 in this district appears very favorable, much better than this time last year. There is a great improvement in the asbestos mining industry throughout the Thetford district; new mining properties are being opened up and the old industries are improving and modernizing their plants. There is every appearance of this business increasing. The principal traffic from our section is in manufactured lumber and pulpwood (this latter being exported to the United States), asbestos, chrome iron and agricultural produce, all of which are in very prosperous condition.

—General Manager.

Mexico—Answers to Question 1.

Road A.—The general outlook for 1910 is fairly good.

—President.

Road B.—General outlook for 1910 is much better than for 1909, as well as much brighter than the normal outlook. I expect the improvement to continue rapidly.

—General Manager.

QUESTION 2—WHAT KINDS OF TRAFFIC ON YOUR LINE OFFER THE BEST PROMISE AND WHAT KINDS OFFER THE POOREST PROMISE, FOR 1910?

Central West and Trunk Lines—Answers to Question 2.

Road A.—Good outlook for gradual improvement along all lines.

—President.

Road B.—Our heaviest increase in traffic for the fiscal year

1910 will come from the manufacturing industries. We also anticipate a much heavier movement of ore on account of the requirements of the steel plants located along the line of our railway. Agricultural products will, of course, depend largely upon the crop results, and will probably show the lowest percentage of increase. —Receiver.

Road C.—General merchandise and products of metal construction offer the best indications of growth.

—General Manager.

Road E.—Expect to see improvement in all kinds of traffic except possibly logs and lumber.

—Vice-President.

Road F.—The traffic which shows the best promise for the year is merchandise, coal, lumber and grain. As compared with a year ago, cotton is showing, and will show the balance of the season to September 1 next, much smaller volume, this being due to the fact that, on account of the drought of last summer, there is a considerable shortage in the crop, which is estimated to be about 65 per cent. of normal, and the further fact that the cotton merchants in the South, where they are financially able to do so, are holding same for higher prices.

—President.

Road G.—The classes of traffic from which the company should enjoy the largest net returns in the coming year are merchandise, miscellaneous loading of structural and building material, grain, etc., with coal and other low-rate commodities offering the least promise as net-revenue-producing traffic.

—President.

Road H.—I believe that the products of manufacture offer the best promise, and I do not at this time think of any class of traffic that will likely be poorer than at present. The products of agriculture will depend, of course, upon the crops for 1910.

—President.

Road I.—What kinds of traffic on your line offer the best promise and what kinds offer the poorest promise for 1910? The traffic offering the best promise for 1910 is the general business rather than the grain and live stock, which usually is our greatest business.

—General Manager.

Road J.—At this time, on our line, grain and its products, forest products, and general merchandise offer the best promise for 1910. Live stock and building stone offer the poorest promise. Less live stock, for various reasons, is being fed for market in our territory than usual. Cement is, to a great extent, now taking the place of building stone.

—General Manager.

Road K.—As to kind of traffic offering the best promise and the poorest promise for the coming year, it would be difficult to distinguish as between kinds of traffic, as we find that all are affected. There has been large increase in our merchandise traffic, probably due to the fact that stocks have been worked down very low in the last two years and are now being replenished. With the increase in manufactures there will also be large increase in coal, iron ore, limestone, etc.

—General Manager.

Road L.—The logical conclusion is that building material of various kinds will show the largest per cent. of increase; construction work having been held in abeyance during the past two or three years. It is reasonable to anticipate that, with a return of normal good times, capital will seek investment in improvements of this character on the theory that the outlook justifies it.

—President.

East—Answers to Question 2.

Road A.—Merchandise and anthracite coal offer the best promise; passenger business the poorest. —President.

Road B.—It is difficult to say what kinds of traffic on our line offer the best promise or the poorest for 1910. Undoubtedly manufacturing interests generally in the country, next to the railways, suffered more from the panic of 1907 than any others. In like proportion they have, therefore, benefited as a result of the revival of business generally, and it is our opinion that the manufacturing interests will probably enjoy

the greatest improvement in business in 1910. —President.

Road C.—It is difficult to determine any particular line of traffic which will be more prosperous than the others; we look for a steady increase.

—General Manager.

Road D.—The traffic on our line which offers the best promise is the extensive building operations, and the moving of lumber and other materials for the same. We have no conditions in this territory which offer a poor promise for 1910.

—President.

South—Answers to Question 2.

Road A.—Fertilizer, live stock and lumber offer the best promise for 1910.

—General Manager.

Road B.—Shipments of iron ore and coal offer best promise; other commodities will move in proportion as their movements increase.

—General Manager.

Road C.—There has also been great revival in lumber traffic. It is hard to prophesy how long the lumber business will continue good, but indications are favorable, for the reason that the country bought sparingly for the past year and a half or two years, and nearly all stocks ran low.

—Vice-President.

Road D.—The traffic on our line is largely agricultural, mining of phosphate rock, and products of the forest, and all are improving, except the phosphate rock traffic, which no doubt will be lighter during the next twelve months than for the past twelve months.

—President.

Road E.—The increase in traffic is principally in farm products and fertilizers. The farming interest of this section is developing rapidly, and industrial enterprises are increasing in like proportion.

—President.

Road F.—Tobacco, lumber and truck will offer the best promise. The peanut crop is much poorer this year than last.

—General Manager.

Road G.—The traffic on our line is pine and hardwood. The agriculture has been of little promise, but think it will do better in 1910.

—General Manager.

Road H.—The traffic on our line that offers the best promise is movement of agricultural products in and out. The present price of cotton has been of material advantage to the farmer, and we expect a large increase in the movement of commercial fertilizers this coming spring and a correspondingly heavy crop of cotton next year. I also expect an improvement in our through traffic to points farther south. The prospect for lumber shipments is poor, owing to the depletion of the forests.

—Vice-President.

Road I.—The volume of cotton to be moved is somewhat less than last year. The movement of other agricultural products will probably be approximately the same as last year. Greater industrial activity will result in larger movements of coal, mineral products, forest products and factory products. A larger volume of general merchandise traffic may also be expected.

—President.

Southwest—Answers to Question 2.

Road A.—Our principal traffic is mining products and those due to smelting operations, live stock, and agricultural products from irrigated sections. Prospects for all are good.

—President.

Road B.—The traffic in building material and general merchandise offers the best promise of increased business.

—Vice-President.

Road C.—All kinds of traffic on this line indicate improved conditions, and with a good crop in 1910, this territory will offer good promise to all classes of traffic.

—Receiver.

Road D.—Lumber and cotton are our principal resources, and promise well.

—Vice-President.

Road F.—It is too early to predict yet what would offer the best promise in the way of traffic for 1910. There is so much dependent upon the crop outlook that cannot yet be forecast.

—Vice-President.

Road G.—We think merchandise and lumber offer the best

promise; we expect a light movement in cotton owing to the short crop.

—General Superintendent.

Road H.—This is a difficult question, but it is fair to assume that the products of the forest and of iron, together with the higher grade commodities which are all going into the rapidly-developing Southwest, will be the mainstay of our 1910 business. I do not know of any business which at the present time could be classed as affording a poor promise.

—Vice-President.

West and Transcontinental—Answers to Question 2.

Road A.—About the same. Products of the soil, we hope, will show an increase.

—Vice-President.

Road B.—As successful crops depend so largely upon climatic conditions, it is impossible to forecast with any exactness the traffic in agricultural products, which should be excellent with favorable weather, while present prospects are favorable for a good tonnage of lumber, coal, merchandise and traffic generally.

—Vice-President.

Road C.—I cannot make any comparison as suggested. The shipments of agricultural and forest products will both be on a generous scale, and the purchasing power of the people is such that merchandise and building material may be dealt in liberally.

—President.

Road D.—Principal traffic on our line is lumber and lumber products. The outlook for that business is very promising. We have completed a new line into a lead mining territory. While there is considerable development work being done in that section, it is too early to state what it will amount to. A large cement mill is being constructed on the new line also. Prospects for their business very good indeed. We have some dairy and considerable agricultural territory. Demand for their products always good in this section.

—President.

Road E.—The territory served by my lines is in the main an agricultural and stock-raising territory, with large coal mining interests in some sections. The development of the country is steadily increasing the volume of agricultural products shipped out, and the increasing prosperity of the people, together with the steady stream of immigration, results in the shipment in of an increasing volume of lumber, cement and other building material, emigrant outfits, agricultural implements, household goods, and, in fact, all of the commodities necessary both to the existence and comfort of the inhabitants. It is impossible to specify any particular commodity offering special promise.

—General Manager.

Canada—Answers to Question 2.

Road A.—Asbestos and chrome iron traffic and lumber business offer the best promise. In fact, every industry along our line looks prosperous.

—General Manager.

Mexico—Answers to Question 2.

Road A.—Fuel offers the best promise for 1910.

—President.

Road B.—The development of the lumber industry offers the greatest promise.

—General Manager.

QUESTION 3—HOW DO YOUR LABOR COSTS COMPARE WITH THOSE OF LAST DECEMBER, FOR A GIVEN AMOUNT OF WORK DONE?

Central West and Trunk Lines—Answers to Question 3.

Road A.—About the same.

—President.

Road B.—There has been no change in the existing schedule of employees in train and engine service, car and locomotive repair shops since December, 1908. Compensation of agents and operators has been increased at several points, and we are also obliged to pay higher rates for competent clerical help. The cost of ordinary labor on track and construction work has been increased about 10 per cent. It is generally understood that demands for increased pay for train, engine and yard men, as well as mechanical employees, will be presented to all railways in the near future.

—Receiver.

Road C.—With the exception of labor involved in out-door construction work, track-laying, etc., which shows an increase of from 10 to 12 per cent. over last year, there is no material difference in labor costs.

—General Manager.

Road D.—Up to the present date there has been no material change in cost of labor, but some little advance in cost of materials.

—Assistant to President.

Road E.—Labor cost us about 2½ per cent. more than a year ago.

—Vice-President.

Road F.—Labor costs are about the same as those of last year, but it is questionable if we will be able to hold them to that basis. All kinds of organized labor are making requests for increase in wages, or, which is equivalent, more favorable working conditions at the same wages.

—President.

Road G.—While there has so far been little change in the pay of labor in this territory, the demands which are now being pressed by the larger organizations are somewhat alarming. More serious, however, in its bearing on efficient operation than the demands for increased wages, is the fact that the efficiency of labor diminishes with any increase granted. Many an employer would think favorably of an increase in wages if he got any increased loyalty or increased efficiency thereby, but when he finds that a 10 per cent. increase in wages results in a 10 per cent. decrease in efficiency, he is alarmed. There is a serious fault in our economic conditions that this can be so.

—President.

Road H.—Our labor costs are somewhat higher than for last December, and there seems to be something of a feeling that the employees will demand still higher wages.

—President.

Road I.—Ordinary labor is from 15 to 20 per cent. higher compared with this time last year.

—General Manager.

Road J.—If there has been any change in our cost for labor for amount of work done, compared with a year ago, it is in the direction of enhanced cost for labor, without a corresponding enhancement in quality or volume of work performed. At present there is more or less restlessness on the part of labor, due partly to the increased cost of living, and partly to ill-advised agitation.

—General Manager.

Road K.—Cost of labor and results, compared to last December, are practically the same.

—General Manager.

Road L.—Labor costs, generally speaking, show an increase over last December. When there is a scarcity of work and an abundance of labor the tendency is for those employed to conserve their employment by giving the employer good measurement. The reverse is apt to be the case when there is a large demand for labor and a corresponding difficulty in securing good labor.

—President.

East—Answers to Question 3.

Road A.—Labor costs are increasing, due to having to take on poorer labor and general tendency to let down.

—President.

Road B.—Our labor costs for given amount of work done are about the same as in December, 1908. This is due to the fact that there was substantially no decrease in wages paid to any class of railway employees as a result of the 1907 business depression. There are many demands for increases in wages now under consideration, and the probabilities are these will be pressed during the early part of the coming year.

—President.

Road C.—There is not any material change in cost of labor.

—General Manager.

Road D.—Our labor costs compare favorably with those of last year for a given amount of work done. There is a slight increase in rate, but insignificant, and we have no complaint to make as to the efficiency of the work done by our men during the past year.

—President.

Road E.—We see no particular change in the cost of labor as compared with a year ago.

—Vice-President.

South—Answers to Question 3.

Road A.—Some slight decrease in labor cost, brought about by the fact that we have been able to eliminate many of the more inefficient workmen. —General Manager.

Road B.—No material change. —General Manager.

Road C.—Improved business has brought about some scarcity in labor and some increases in wages. —Vice-President.

Road E.—The cost of labor at present is about the same as it has been for some time past, but with an indication of an upward tendency. —President.

Road F.—Our labor costs, compared with last December, are practically the same. —General Manager.

Road G.—Our labor costs the same as last December, but on account of limited demand for labor we get better results from them. —General Manager.

Road H.—Our labor costs, compared to those of last December, have slightly increased, owing to increase in salaries paid clerical force and some increases in shop forces. The maintenance of way, labor and wages of engineers, firemen and conductors remain the same as last year. —Vice-President.

Road I.—Labor costs, as measured by the amount of work done, are approximately the same as at this time last year. —President.

Southwest—Answers to Question 3.

Road A.—Labor costs are higher. —President.

Road B.—Labor costs have increased since last December. —Vice-President.

Road C.—Labor costs more at this time than last December for the same amount of work done. —Receiver.

Road D.—Labor costs will not advance with us. —Vice-President.

Road E.—About the same as a year ago. —Vice-President.

Road F.—Labor cost generally somewhat higher than last December, and there is constant demand to increase wages. —Vice-President.

Road G.—Our labor costs are considerably greater than last December, owing to the fact that with the increase in business labor was in position to demand higher pay. —General Superintendent.

Road H.—Rates of wages are about on a parity with last December. In my opinion, however, we are still getting a better return in labor performance for the money invested, but on account of the increasing demand for labor this is not so distinctive as it was one year ago. —Vice-President.

West and Transcontinental—Answers to Question 3.

Road A.—Labor costs about the same as last December. —Vice-President.

Road B.—Labor costs are in most cases about the same as last year, although where there is any difference they are higher and not lower. An increase of 5 per cent. to 10 per cent. for a given amount of work has taken place in track labor. Because of increases on some of the lines, shop and transportation labor costs average slightly higher than last year. —Vice-President.

Road C.—Labor costs show an increase, and there is a tendency for wages to advance. —President.

Road D.—Labor cost is 20 per cent. higher than a year ago. —President.

Road E.—Labor costs, in comparison with amount of work done, are steadily increasing, as rates of wages paid in all lines are advancing more rapidly than can be offset by increased efficiency of the labor. —General Manager.

Canada—Answers to Question 3.

Road A.—There has been no material change in the cost of labor since last December. The wages for labor paid throughout our section are very high in comparison with other districts: common unskilled laborers in mining receive \$1.75 per day, same wages being paid this year as last year. —General Manager.

Mexico—Answers to Question 3.

Road A.—Our labor costs are about holding their own. —General Manager.

Road B.—The comparison with last year is favorable. —President.

QUESTION 4—HOW DO YOUR COSTS FOR MATERIALS COMPARE WITH THOSE OF A YEAR AGO?**Central West and Trunk Lines—Answers to Question 4.**

Road A.—Slightly higher. —President.

Road B.—At the present time the cost of all materials, excepting where we have old contracts still in effect, is from 5 per cent. to 10 per cent. higher than a year ago. In nearly all lines prices are very firm at the present time, with indications that they will go still higher as business improves. —Receiver.

Road C.—There has been a gradual change in the price for certain classes of material. I should say that the average cost had increased about 5 per cent. After January 1 next I look for larger advances. —General Manager.

Road E.—There has been a large increase in cost of nearly all our material, certainly 10 per cent. —Vice-President.

Road F.—There has been some increase in the cost of certain materials, principally steel, lumber and paint. Other commodities are about the same as a year ago; probably a general average will show an increase of 8 to 10 per cent. as against December 1, 1908. —President.

Road G.—Material prices are slightly higher than a year ago and the tendency is upward, so that, with continued prosperity we must look for still higher prices in the ensuing year. —President.

Road H.—Costs for materials are at least 15 per cent. higher than a year ago. —President.

Road I.—Everything in the way of material into which steel and iron products enter, excepting steel rails, will average about 25 per cent. more in cost compared with a year ago. Other materials or supplies, such as truck ties, bridge timber, coal, etc., used in large quantities by railways, can be purchased now at about the same cost or very little greater than a year ago, although the tendency is more noticeably upward right now on the latter material or supplies. —General Manager.

Road J.—Compared with a year ago, the materials used by us range in price approximately as follows: Iron and steel products, 10 per cent. higher; excepting steel rail, no material change as yet; fuel, upward tendency; miscellaneous articles, upward tendency; ties, lumber and other forest products, 10 per cent. higher. —General Manager.

Road K.—Cost of material is no different than a year ago—prices are quite as high. —General Manager.

Road L.—The costs for materials are higher than a year ago, being always regulated by supply and demand. —President.

East—Answers to Question 4.

Road A.—Costs of materials are steadily and rapidly increasing. —President.

Road B.—Our costs for material, compared with those of a year ago, are higher by from 25 per cent. to 33½ per cent. —President.

Road C.—Present prices of all material, as against prices of a year ago, are almost invariably from 10 to 25 per cent. higher. —General Manager.

Road D.—The costs for materials are about the same as a year ago, but the indications are that there will be considerable increase in costs of materials early in 1910. —President.

Road E.—Materials have advanced very considerably in price. —Vice-President.

South—Answers to Question 4.

Road A.—Cost of nearly all of the materials used by railways has increased, some as much as 10 per cent.

—General Manager.

Road B.—No material change.

—General Manager.

Road C.—Materials, particularly lumber, have increased.

—Vice-President.

Road D.—The cost of materials is steadily increasing, as compared with a year ago.

—President.

Road E.—The cost of material is advancing considerably.

—President.

Road F.—There is a slight increase in the cost of materials over last year.

—General Manager.

Road G.—Costs of materials are about the same as a year ago.

—General Manager.

Road H.—There is an increase in the cost of materials—ties, lumber, iron and steel. We will probably be able to get our fuel at a lower price than we did last year.

—Vice-President.

Road I.—Costs of material are in no cases lower than a year ago. On most articles there have been advances.

—President.

Southwest—Answers to Question 4.

Road A.—Fuel considerably higher and general increase in other materials.

—President.

Road B.—Costs of practically all kinds of material have increased, compared with a year ago.

—Vice-President.

Road C.—The cost of material has increased as compared with a year ago.

—Receiver.

Road D.—Materials have and will cost us 10 per cent. more than a year ago.

—Vice-President.

Road E.—Iron and steel are much higher; lumber somewhat lower; other commodities about the same.

—Vice-President.

Road F.—There has not been much change in the cost of materials compared with a year ago. Some grades of fuel are cheaper.

—Vice-President.

Road G.—The cost for material, in some instances, has increased, while in others it is about the same as a year ago.

—General Superintendent.

Road H.—Material costs are advancing rapidly—lumber 20 to 25 per cent.; iron and steel finished products, 15 to 20 per cent.; rubber goods, 15 per cent.; packing, 10 per cent. A fair expression of material market conditions is to place it from 15 to 20 per cent. higher than one year ago.

—Vice-President.

West and Transcontinental—Answers to Question 4.

Road A.—About the same.

—Vice-President.

Road B.—With the revival of business there was a tendency toward the maximum in material costs which will average considerably higher than last year at this time, general increases being about 7 per cent. or 8 per cent. Increases are noted in lumber, ties, material for car repairs, iron and steel.

—Vice-President.

Road C.—Costs for materials are higher than a year ago.

—President.

Road D.—Material cost, very little change as yet, but tendency to advance.

—President.

Road E.—Costs of materials used are also steadily increasing in almost all lines.

—General Manager.

Canada—Answers to Question 4.

Road A.—Cost of material is slightly in advance of last year.

—General Manager.

Mexico—Answers to Question 4.

Road A.—Some are higher.

—President.

Road B.—Slight advance.

—General Manager.

QUESTION 5—WILL THERE BE ANY MORE HARM DONE IN THE NEAR FUTURE BY RECKLESS STATE**LAW MAKING IN YOUR TERRITORY, OR DO YOU THINK THAT THE CRISIS HAS PASSED, AND THAT THE TENDENCY NOW WILL BE FOR CONSERVATIVE LAWS RATHER THAN RADICAL ONES?****Central West and Trunk Lines—Answers to Question 5.**

Road A.—While there has been an apparent temporary cessation, the greatest effort on the part of fair-minded people will be necessary to properly discourage further reckless legislation.

—President.

Road B.—We do not anticipate that there will be any ill-considered legislation in this state with reference to the railways. At the present time there is an effort being made looking toward a reduction in the rate on our principal commodity, which, if successful, will have a very marked effect upon our net earnings. This litigation, however, is brought under the existing law, and we feel that for the present the tendency is to enforce the present regulations rather than to formulate new ones. There is no indication, however, that there will be any let-up in the attempts to increase taxation, and in our opinion the railways will be obliged to be on the alert to prevent further adverse legislation. With return of better business conditions the object lesson which the people have been given will lose its effect, and the reformers are likely to become active in an endeavor to pass laws designed to increase the expenses and decrease the revenues of the carriers.

—Receiver.

Road C.—I think conservatism will mark the future treatment of most railway questions in the territories through which this road runs, by legislative bodies.

—General Manager.

Road D.—No one can predict what state legislation will be enacted; the question of a change in the method of taxation in Ohio, affecting railways as well as all other property, has been agitated for some time, advocates of the change desiring an amendment to the constitution which would permit a classification of the various kinds of property and different rates of taxation on the several classes; and no doubt efforts will be made in the next legislature to secure the submission to the people of such an amendment. The effect upon railways of such an amendment, if adopted, is entirely problematical.

—Assistant to the President.

Road E.—We have a railway commission that is just beginning to feel its oats. The Lord only knows what they will do to us.

—Vice-President.

Road F.—It is impossible to say whether the legislatures of the various states will pass further laws adverse to the railway interests. Our own particular system traverses a great many states, and in some of them the sentiment is much more favorable than was the case a year ago, and we are not advised that any radical legislation will be enacted in the others, although there is some agitation for certain laws which are not necessary or advisable.

—President.

Road G.—The hostility against railways and corporations is probably diminishing, and there is, no doubt, a better mutual understanding between railways and the public than there has been for some time. It is regrettable that the most serious legislation now proposed is that backed by labor organizations. There is a disposition now on the part of the general public to let the railways settle their differences with the labor unions without any interference, but it is evident that the public will have to understand sooner or later that if the labor organizations are successful in compelling the railways to employ two men to do one man's work, there is a serious economic loss which the general public will have to pay for in the end.

—President.

Road H.—I do not look for much adverse legislation by the states during the next year.

—President.

Road I.—The state law-making is in the hands of the same kind of politicians now that it has been in the past, and there

is little noticeable difference in the tendency in the direction of enacting laws that will affect railways. There may be less effort on the part of the legislators to reduce rates, because they have made about as many reductions as they very well can make for the present. There is a tendency, however, on the part of the legislators to bring in and enact laws apparently under the influence of the labor lobby that have a bad effect generally on railways, such as laws restricting the numbers of cars in trains and unnecessarily adding to the number of men employed on trains. In other words, there is an apparent effort to legislate without regard to the rights of the railways or without any idea that it will add to the safety or efficiency of railway service, but solely for the purpose of causing the railways to employ more men.

—General Manager.

Road J.—I do not look for the enactment of many, if any, unjust anti-railway laws in the near future, by any of the states reached by our line. The crisis in that direction, which seemed at one time, not long ago, to be reached, seems to have spent itself, at least for the time being. A more conservative tone seems now to prevail. Meanwhile it remains to be seen how some of the burdensome state laws, already passed, will be construed by the courts. We are, of course, always subject to "judicial legislation," so-called, by means of which old laws are expanded to meet the changing conditions, not contemplated when the laws were enacted.

—General Manager.

Road K.—Effect of reckless state laws—is the crisis past? We find the tendency now is to conservative rather than radical laws. The bill, however, now up in Congress for increased number of men on freight and passenger trains, estimated to cost the railways in this country on present basis of business, about ten millions of dollars, without any additional advantage, cannot be considered as a conservative law. In fact, it is a most radical move on the part of the labor organizations to offer employment to additional men, for no other use than to draw pay.

—General Manager.

Road L.—Public opinion seems to favor more conservative laws. It is difficult to tell, however, what may confront us in the way of radical legislation and the harm resulting.

—President.

East—Answers to Question 5.

Road A.—In all probability there will be more legislation. The railways are still the easiest thing for the demagogue to make a reputation on.

—President.

Road B.—There does not appear now to be any very influential movement under way to secure further legislation affecting the railways. In certain of the states through which our lines run it is difficult to see how any more radical or extreme legislation could be possible than already exists. We can see no indications that the severity of any of this state legislation is likely to be ameliorated in any degree.

—President.

Road C.—In our opinion there will not be any more harm done in the near future by reckless state law-making in our territory. The crisis seems to have passed and the tendency is for conservative laws.

—General Manager.

Road D.—It looks as though there might be the same yearly desire on the part of the state legislature to enact new laws which affect the operation of railways as yearly present themselves at the state capitol. We think the crisis has passed to a large extent, and while there may be the usual laws proposed, the conservative element in the legislature will control the radical one.

—President.

Road E.—As far as I am able to learn there is no reason to believe that there will be any adverse legislation, affecting us at least, during the coming winter.

—Vice-President.

South—Answers to Question 5.

Road A.—I think this depends entirely upon the pace set by Congress.

—General Manager.

Road B.—Hard to tell, but the indications are the crisis is reached, and the tendency will be now for more conservative laws.

—General Manager.

Road C.—The tendency here is for conservative laws, and a kindly feeling toward the railways prevails.

—Vice-President.

Road D.—As to reckless state law-making, while I think the majority of people generally have been and are disposed to be fair to railway and other corporations, the anti-feeling against corporations has been confined largely to demagogic politicians, and while we look for a little more peace and quiet, it is hard to determine at this time just what the action of the national and state legislatures will amount to.

—President.

Road E.—The indications point to more conservatism in state legislation, but there is still an element in political circles tending to extremes.

—President.

Road F.—Do not consider there will be much more adverse legislation in our territory.

—General Manager.

Road G.—I do not think that there will be any laws passed in this state that will be radical against corporations, but am inclined to believe that more conservative measures will be advocated.

—General Manager.

Road H.—I think the tendency in state legislation in the regulation of railways and rates will be more conservative, and I believe there is a more intelligent comprehension of the rights of the railways, and a deeper realization of the disastrous results affecting all classes of citizens in drastic and unjust laws which affect the earning capacity of railways.

—Vice-President.

Road I.—Indications are that legislation will be conservative.

—President.

Southwest—Answers to Question 5.

Road A.—Having faith in the ultimate judgment of the people, I believe there is a tendency for less radical legislation, and I hope for fewer and better laws.

—President.

Road B.—As our state legislature does not meet until January 1, 1911, there will be no laws of any sort passed during the ensuing year. I believe the tendency in law-making in this state is toward conservatism rather than radicalism.

—Vice-President.

Road C.—We do not fear any reckless state law-making in this territory. The tendency, locally, is for conservative laws rather than radical ones. What we fear most now is congressional legislation rather than state, Congress, for political purposes, having undertaken to run and manage the business, both of commercial and railway interests, instead of regulating them. In my opinion, owing to the fact that the old political lines between the Democrats and Republicans have practically been eliminated, both parties seem intent on manufacturing some hobby for political purposes. The result is, that both parties appear to have selected railways and other large financial commercial interests as a hobby, and to impress the people with the fact that if it were not for Congress, railways and the commercial interests of the country would destroy the government, and that nothing but a congressman and a senator can prevent this great calamity.

—Receiver.

Road D.—I do not think state legislation will be detrimental to us; in fact, we have no meeting of the legislature at an early date.

—Vice-President.

Road E.—Cannot say what the legislatures will do, although there appears to be a more conservative feeling generally.

—Vice-President.

Road F.—It is expected that reckless state law-making will continue in this territory, and it would be rash to predict that conservative laws will be enacted or that any of the radical ones will be abolished as long as a class of professional politicians continue to make laws and to occupy practically all of the state offices. A change may be brought about when

business men will consent to serve in legislatures and on commissions.

—Vice-President.

Road G.—We cannot estimate how much reckless legislating will be done by our future law-makers, but we have a feeling that the crisis has passed and that the tendency will be for more conservative action, but politics and politicians are always an unknown quantity that you cannot provide for, but we believe the people at large have a more conservative feeling than they did a year ago. —General Superintendent.

Road H.—I am optimistic as to the general attitude of the various state legislatures in this territory, and if the railways themselves take the proper measures toward establishing the right kind of relations with the legislators, meeting them in a fair and candid spirit, and when measures are proposed sending their very best men to reason the matter, I have every confidence that we can expect conservative rather than radical measures to meet with favor.

—Vice-President.

West and Transcontinental—Answers to Question 5.

Road A.—Regulation is a favorable theme for legislation at every season, and I do not think such a theme will be abandoned.

—Vice-President.

Road B.—It is always difficult to forecast legislative action, but we think conditions in this respect are very much the same as last year at this time, and that where any difference exists it is with an inclination toward conservatism rather than radicalism.

—Vice-President.

Road C.—No legislatures meet in our territory this year, so there will not be law-making. It is difficult to say what the tendency will be when the next legislatures convene.

—President.

Road D.—Always danger of reckless laws, particularly in new states.

—President.

Road E.—It is impossible to say whether or not there will be any more harm done by reckless state law-making in our territory, but, on the whole, the tendency of popular opinion seems to be becoming more conservative and less antagonistic to railways and other public service corporations, which change in popular opinion will probably be reflected in the action taken by the various legislative bodies.

—General Manager.

QUESTION 6—IS LOCAL POPULAR FEELING IN YOUR TERRITORY MORE OR LESS ANTI-RAILWAY AND ANTI-CORPORATION THAN IT WAS LAST DECEMBER? DO YOU SEE SIGNS OF REACTION TOWARDS A KINDLIER FEELING?

Central West and Trunk Lines—Answers to Question 6.

Road A.—A kindlier feeling is manifest. —President.

Road B.—There is no perceptible change in the attitude of the public toward the railways in this territory as compared with a year ago. The conditions, however, are undoubtedly better than they were during the so-called anti-railway agitation which prevailed previous to the depression in business in 1907.

—Receiver.

Road C.—I think the local popular feeling is swinging around to less unfavorable attitude toward corporations.

—General Manager.

Road D.—Personally, I think the popular feeling in our territory is less anti-railway. —Assistant to President.

Road E.—Popular feeling is about the same.

—Vice-President.

Road F.—I think that so far as local feeling toward railways and corporations is concerned the pendulum has to some extent swung the other way. We are getting in some localities much fairer treatment in the courts, and, to quote your own words, in some localities at least there are "signs of reaction toward a kindlier feeling."

—President.

Road H.—The feeling in that respect seems rather more conservative.

—President.

Road I.—Local popular feeling in our immediate territory has never been in recent years very strongly anti-railway and anti-corporation.

—General Manager.

Road J.—It appears on the surface as if popular feeling in our territory, regarding important matters, is less anti-railway than it was a year or so ago. The public, as a whole, seems to have grown more considerate in that direction. At the same time there is a growing disposition on the part of the public to demand its "pound of flesh," so far as local facilities are concerned, through the state commissions.

—General Manager.

Road K.—Local popular feeling, anti-railway and anti-corporation, is not much changed from conditions a year ago.

—General Manager.

Road L.—There is always an undercurrent of anti-railway, anti-corporation sentiment existing in all communities, generally harbored by the element that is least comprehensive. I am inclined to think that the men of affairs who are in the habit of thinking before they give expression to conclusions recognize that agitation of the railway and corporation question has been overdone.

—President.

East—Answers to Question 6.

Road A.—Slightly kinder.

—President.

Road B.—In the territory through which our lines run we have never in the past detected any local popular feeling of any consequence antagonistic to railways or corporations. All that ever has existed, so far as we have been able to see, has been largely worked up by politicians connected with the two leading political parties, who have been playing for political position and popularity with the voters. As to this element we see no signs of a reaction toward kinder feeling with reference to railway interests.

—President.

Road C.—There seems to be a slight change in the popular feeling in favor of corporations.

—General Manager.

Road D.—We consider that the local popular feeling in this territory is less anti-railway and anti-corporation than it was last year. We see distinct signs of reaction toward a kindlier feeling.

—President.

Road E.—I cannot say that public feeling in our territory was particularly anti-corporation a year ago; it is certainly not more so now than it was then.

—Vice-President.

South—Answers to Question 6.

Road A.—My judgment is there is a much kindlier feeling.

—General Manager.

Road B.—I believe there are signs of a kindlier feeling.

—General Manager.

Road E.—I think the crisis has been passed to some extent in anti-railway and anti-corporation feeling, and a more favorable sentiment now prevails.

—President.

Road F.—I see some signs of reaction toward a kindlier feeling toward corporations.

—General Manager.

Road G.—The local feeling against corporations in our territory is more friendly, but at the same time with the jury trial in corporation cases it goes without saying that the corporation cannot get any justice in the lower courts.

—General Manager.

Road H.—Local popular feeling in this territory can be divided into two classes. There is little or no change in the antagonistic feeling in the rural districts. There is a more kindly spirit manifested in the cities and larger towns. I believe that the reaction will come through the leaven of this feeling in the cities, and that we may expect a more just and intelligent attitude by all classes of citizens.

—Vice-President.

Road I.—There are unmistakable indications of a more general understanding of the importance of adequate transportation facilities to general prosperity, and a more general understanding of the fact that railway credit must be maintained if the companies are to provide such facilities and perform efficient service.

—President.

Southwest—Answers to Question 6.

Road A.—Some slight improvement. —*President.*

Road B.—I do not consider local popular feeling in this territory generally hostile to the railways.

—*Vice-President.*

Road C.—Local popular feeling in this territory is less anti-railway than a year ago. Kindlier feeling exists between the people and the railways than formerly. This grows out of the fact, to a large extent, that the people and the railways are dealing directly with each other to a much greater degree than formerly, and are not seeking the intervention of a politician to run their business affairs.

—*Receiver.*

Road D.—Local feeling good on our line, and we have the hearty co-operation of the tributary business. I think Texas, generally, has a kinder feeling for railways than in the past.

—*Vice-President.*

Road F.—Popular feeling, without question, in this territory is less anti-corporation than it was last December, and there is no doubt but that there is a better feeling on the part of the general public toward all corporate interests. This feeling, however, is latent, and unfortunately never gets aggressive on the corporation side.

—*Vice-President.*

Road H.—I think it is a fair reflection of the actual conditions to say that there has been a decided reaction in the anti-railway and anti-corporation feeling of the past few years, and unless issues which are unforeseen at this time should be precipitated, I am sure that this reaction will continue.

—*Vice-President.*

West and Transcontinental—Answers to Question 6.

Road A.—More or less anti-railway. Do not notice any particular change.

—*Vice-President.*

Road B.—We believe during the past year there has been a decline in anti-corporation sentiment and that public opinion is more kindly than a year ago. A review of the attitude of newspapers in our territory which reflects this, indicates unfavorable sentiments on about the same percentage of the total as a similar review made at this time last year, with a marked decrease in number of those unfavorable as compared with two years ago, so that while there is much yet to be desired, we are hopeful of an increase in favorable sentiment rather than the reverse.

—*Vice-President.*

Road C.—I think local anti-railway feeling is less than it was a year ago. I think the railways and the people are getting to understand one another better.

—*President.*

Road D.—The popular feeling is not particularly against railways and corporations except when it comes to damage suits and condemnation proceedings. Then the feeling is "Let the public get all they can."

—*President.*

Canada—Answers to Question 6.

Road A.—Local feeling in our territory is generally favorable toward the railway; there is no sentiment in the direction of anti-railway or anti-corporation.

General Manager.

QUESTION 7—ARE THE STATE COMMISSIONS IN YOUR TERRITORY DISPOSED TO BE FAIR OR UNFAIR, AND ARE THEY BECOMING MORE CONSERVATIVE OR MORE RADICAL AS TIME GOES ON?**Central West and Trunk Lines—Answers to Question 7.**

Road A.—The attitude of the commissions is on fair lines.

—*President.*

Road B.—The railway commission in this state seems to be disposed to be fair and to fully consider the merits of every question submitted to them for decision. The body is composed of intelligent men who are conservative and of a judicial temperament, and in our opinion they strive at all times to obtain a fair and impartial enforcement of the regulations by which they must be guided.

—*Receiver.*

Road C.—The state commissions with which this company

deals are disposed to be fair and act within rational lines. They are affected more or less, of course, by the mandatory features of some of the railway legislation which they are called upon to enforce.

—*General Manager.*

Road D.—State commissions as a rule have to acquire wisdom by experience, and their hearings develop many unreasonable complaints which, I think, tend to make them realize the difficulties under which railway companies labor, and hence to be a little more conservative in their attitude.

—*Assistant to President.*

Road E.—The state railway commission has just reduced our log rates into X. They never asked a question as to what the service was worth to the shipper, or what it cost us, or what the effect would be on other shippers up the road (and it will put them out of business), but just cut the prices for fun and because the X. lumber men asked them to. Knowing what it cost to do business ten years ago and what it costs now, you can judge as to fairness of a commission that would ask us to put in rates lower than those of twenty years ago.

—*Vice-President.*

Road F.—The state commissions throughout our territory, as a rule, have been very fair to the railway interests. In one or two cases they have been extremely radical, but these are the exceptions, and certain inadvisable action they have taken has been for political purposes only. In most instances, we have been able to destroy their effect by litigation or otherwise, and I anticipate with closer acquaintance with railway operation the individual commissioners will adopt a more conservative position.

—*President.*

Road G.—We have no complaint to make of the attitude of the federal commission or state commissions toward the railways. The more familiar these bodies become with the railway problems the less disposed they are to find fault with railway operation. It is an old adage that "Responsibility makes for conservatism."

—*President.*

Road H.—The state commissions generally in our territory are becoming more conservative as time goes on. There are some exceptions to this rule. The men who have been in office for some time have learned something of both sides of the questions, while the newer ones are inclined to be more radical.

—*President.*

Road I.—The state commissions do not appear to be so active in putting into effect rules and regulations of their own on all sorts of subjects as they were a few years ago.

—*General Manager.*

Road J.—We have no especial cause for complaint at this time against any of the state commissions within whose jurisdiction we are located. If any of them have in the past seemed at times to be inclined to adopt radical methods, such is not the case at present. Their rulings now are, almost always, based on the merits of the cases presented to them for adjustment.

—*General Manager.*

Road K.—State commissions in this territory appear to be fair, but take up much of our time asking questions and promulgating orders of slight importance.

—*General Manager.*

Road L.—State railway and warehouse commissioners through the various states served by this company, I think, comprise men who are better qualified, either from experience or training, to serve the interests they represent than perhaps was the case when the office was more or less controlled by politics. In other words, a commissioner's fitness to intelligently discharge the duties of the office now seems to influence his retention in office more than his activity in politics. The result is that the commissioners are doing better work for their constituents, and the relations between the commissioners and the railways are, generally speaking, cordial.

—*President.*

East—Answers to Question 7.

Road A.—The state commissioners seem to be muddling

amateurs trying to please their constituents, or theorists endeavoring to work out their fads.

—President.

Road B.—We see no change in the attitude of the state commissions in our territory with reference to the railways or the questions that from time to time are brought before them involving the relations of common carriers to the public at large. We have never seen anything to indicate that these different bodies as a whole are consciously disposed to be unfair to the railways, and the men constituting them seem in most cases to be able, honest and conscientious in the discharge of their duties. They are but human, however, and as their positions have been created and they appointed largely as a result of political influences and exigencies, the element of politics is bound to more or less affect their investigations and decisions. Furthermore, the men forming these railway commissions are, and necessarily always will be, interested in magnifying the importance of their positions and of the important branches of governmental work which have been committed to their supervision and control. As a result of this they are continuously bringing all possible influence and pressure to bear to secure further amendments of existing laws that will give them greater control over the affairs of railways and corporations, increase the number of state employees connected with their commissions in various capacities, and to in every way enhance the importance of their positions. The amendments to both the national and state laws now being actively promoted are without doubt due to the influence and efforts of the different commissions exerted along the lines and for the purposes I have indicated above. This we think especially true as respects the amendments to the national laws which it is understood Congress will be asked to make at its forthcoming session.

—President.

Road C.—State commissioners in our territory have been for a number of years, we consider, strictly fair.

—General Manager.

Road D.—Our territory is controlled by two commissions; one of them is disposed to be very fair and businesslike; the other one is disposed to be over-critical and reaching out all the time for more authority. There is no question but what the commission which attends strictly to business and reasonably and fairly carries out the present law is the one which is accomplishing the best results.

—President.

Road E.—Our relations with the state railway commissions are very satisfactory, and we have no reason to believe that they are going to be any more radical than they have been. I think perhaps it is safe to say that they are somewhat more conservative.

—Vice-President.

South—Answers to Question 7.

Road A.—I think the state commissions are becoming more fair.

—General Manager.

Road B.—The commissions are acting more reasonably; there are very decided indications of an inclination to play fair.

—General Manager.

Road E.—A disposition of fairness is perceptible in the rulings of our railway commission, and a more friendly feeling exists between the railways and the people than formerly.

—President.

Road F.—I think there is more of a disposition on the part of commissioners to deal with corporations on broader and more conservative lines than has been their practice for several years past.

—General Manager.

Road G.—So far as we are concerned the state commission has been entirely fair, and I believe they will be conservative. The only thing we can fear is the time before election, when as politicians the commissioners play for votes of the so-called common people.

—General Manager.

Road H.—The state commission, I believe, tries to be just toward the railways and is becoming more conservative than it was a year or two ago.

—General Manager.

Southwest—Answers to Question 7.

Road A.—The present commission is disposed to be fair.

—President.

Road B.—I believe the state railway commission is disposed to be fair, and is, perhaps, more conservative than it was a few years ago.

—Vice-President.

Road C.—The state railway commission in this territory is disposed to be fair. It is becoming more conservative as time goes on.

—Receiver.

Road D.—In some cases, from the railway man's standpoint, the commission seems unfair. However, in more than half the instances the commission is kindly disposed, and does what it can to encourage railways in Texas.

—Vice-President.

Road E.—Some of the state commissions in our territory are still somewhat radical, but are inclined as a whole to be more conservative. As time goes on I think this condition will continue.

—Vice-President.

Road F.—State commissions generally in this territory are disposed to be unfair, and are becoming more radical as time goes on. It is generally admitted that all important cases called by them are pre-judged; their decisions are usually made before they call the hearing, and the compiling of data and arguments, even of the most convincing kind, on the part of the railways is considered by railway officers a work of supererogation. The commissions are constantly at work grinding out decreased rates or extending concessions to shippers, which have the effect of decreasing rates. Extensive reductions are looked for in the very near future on some of the largest items of traffic handled by roads in this section.

—Vice-President.

Road G.—The state commissions in our territory are, in most cases, disposed to be fair. We believe political influence, in some cases, has had the effect of their demanding some things not entirely reasonable, but on the whole they are disposed to be fair.

—General Superintendent.

Road H.—As a general proposition, the state commissions in this territory are not unfair. There are one or two notable exceptions, but in each case they have reached the point in their reductions and exactions where they are being brought up with a short rein by the courts, and in one instance a commission is seriously considering anticipating the courts by agreeing to material advances. I think they can fairly be said to be more conservative than formerly, partially due to a change in public sentiment and partially to the attitude of the courts.

—Vice-President.

West and Transcontinental—Answers to Question 7.

Road B.—The attitude of state railway commissions varies much in different states through which we travel, and while some of the commissions continue a disposition decidedly adverse to the railway interests, others are inclined to be fair, and we look forward to a better state of public opinion influencing, at least in some degree, radical action which some of the commissions are still inclined to take.

—Vice-President.

Road C.—The state commissions in this territory are composed of very reasonable men, but, of course, with the great power that they have, it is only natural that at times it is exercised in what seems to be an unnecessary manner, especially in the way of making rules and regulations in relation to the detail management of the physical side of the railway.

—President.

Road D.—No state railway commissioner in Idaho. The railway commissioners of the state of Washington disposed to be fair.

—President.

Road E.—I cannot see that there has been any particular change in the attitude of the various state commissions, which, in general, seem to be disposed to go as far as the laws of the states will permit in their activities.

—General Manager.

General News Section.

The Boston & Albany is preparing to use telephones for train despatching throughout its main line.

The Chicago Great Western will soon forget that it is the "Maple Leaf" route, the use of this descriptive pseudonym having been placed under the ban by President Felton.

The trains of the Air Line division of the Lake Shore & Michigan Southern, between Toledo and Elkhart, now run on the right-hand track, the change from left-hand running having been made December 19. This extends the right-hand practice from Chicago to Toledo.

Representative Steenerson, of Minnesota, proposes to urge in Congress a bill which he has prepared giving the government power to appoint a receiver and take the management of a railway, when necessary, to avoid a general tie-up of trains, as in the case of a strike.

On the Chicago & Alton the cabs of passenger engines are being fitted with small auxiliary windows in front, arranged to be easily and quickly opened, so as to enable the engineman at all times to get a good view ahead, in spite of any steam or frost which may dim the main window.

The U. S. Bureau of Education is just issuing a monograph by J. Shirley Eaton—Education for Efficiency in Railroad Service. Copies of this monograph can be had without charge by application direct to the Commissioner of Education, Washington, D. C. This is a very present and live theme.

The request of employees of the Pennsylvania Railroad for a modification of the company's pension plan, whereby, on payment of monthly dues, employees may secure an addition to the pension to be paid by the railway company and may have the privilege of retiring at an earlier age, has been signed by about 4,500 employees of the Philadelphia division.

According to a press despatch from Terre Haute, Ind., a number of railway companies are taking for their own use carloads of coal shipped from mines on their lines. It is said that instead of the old custom of confiscating coal in transit and reporting to the shipper afterward the roads now notify the mine, the day before, of what it is proposed to do, and if the shipper does not agree to the arrangement no empty cars are delivered to his tracks that night.

According to a press despatch from Columbus, Ohio, a Pullman sleeping car, which was seized by a sheriff at Newark, Ohio, more than a month ago, as security for a claim against the Pullman Company, is still chained to a side track at Newark. It is said that the claim in question was one for clothes which a passenger had lost while on a Pullman car. The Pullman company has now filed suit in the federal court against this passenger and against the sheriff who attached the car.

On January 2 the Rock Island will put on a new through train from Chicago to Los Angeles and San Francisco which will be known as the "Californian." It will leave Chicago daily at 10 o'clock p.m. and will make the run to the coast in 82 hours. It will carry both standard and tourist sleeping cars from St. Louis and Kansas City as well as from Chicago. The "Golden State Limited" will be re-equipped, and henceforth will have only standard sleeping cars. It will leave Chicago at 9 p.m. daily and will be scheduled to reach Los Angeles in 72 hours. The Rock Island runs its trains over the Southern Pacific from El Paso westward.

The counsel of the Pennsylvania Railroad, according to a Pittsburgh paper, holds that a railway is bound, not only by courtesy and humanity but also by the common law, to take care of a passenger who is taken sick on its train. A carrier need not admit to its cars a person who is mentally or physically infirm unless accompanied by an attendant, but once a passenger has been accepted it is the carrier's duty, if the passenger becomes incapable of caring for himself, to give, beyond ordinary care, such care and protection as is reasonably practicable with the facilities at hand without unduly delay-

ing the train or unreasonably interfering with the comfort of other passengers.

At the Algonquin Hotel, New York City, December 19, John F. Deems, general superintendent of motive power of the New York Central Lines, gave a "Beardstown reunion dinner" in honor of W. C. Brown, president of the New York Central Lines; L. E. Johnson, president of the Norfolk & Western; E. M. Herr, vice-president of the Westinghouse Electric & Manufacturing Co.; W. G. Besler, vice-president and general manager of the Central of New Jersey, and L. W. Berry, general superintendent of the Lehigh & Hudson. These men succeeded each other in the order that they are named as superintendent of the St. Louis division of the Burlington road, Mr. Deems serving with them as division master mechanic.

At St. Paul last Monday conferences were held between railway officers, the governor of Minnesota and leaders of the Switchmen's Union, in which the railways were asked to agree to a "settlement of the strike"; but the railways refused to reinstate the striking switchmen except as vacancies should occur, and the conference had no result. The leaders of the switchmen hope to secure sympathy and perhaps assistance from all of the railway brotherhoods which are in the American Federation of Labor, but nothing is published to show what, if any, basis exists for this hope. One newspaper account says that traffic is badly tied up in the Northwest, and that many towns are suffering for fuel, but the Associated Press despatches have nothing to say on this point. The four largest railway labor unions do not belong to the Federation of Labor.

Omaha, the center of the corn belt, reports that its National Corn Exposition, December 7-18, was the best ever held, holding the record for attractions, attendance and income. Exhibits were made by the Great Northern, the Union Pacific, the Rock Island lines, the Burlington, the Chicago, Milwaukee & St. Paul, the Illinois Central and the Chicago & North Western. All the railways ran free baggage cars to pick up exhibits along their lines. One of the most enthusiastic of the railway men present was James J. Hill, who offered \$2,500 in prizes. Mr. Hill spent a day and a night in Omaha, making two speeches. In the Great Northern exhibit the value of dry farming was shown. Many of the exhibits came direct from the Dry Farming congress at Billings, Mont. One of the handsomest exhibits was that of the Union Pacific, which contained, besides the ordinary display, a beautiful exhibit of birds from the western country.

All the street railways of the South side in Chicago are to be consolidated under the control of a company to be called the Chicago City & Connecting Railways Company. The companies involved are the Chicago City, the Calumet & South Chicago, the Southern Street and the Hammond, Whiting & East Chicago. About 95 per cent. of the shares of the Chicago City and all of the shares of the other companies have been bought by Chicago interests. This marks the passing of the Chicago City Railway from the hands of the Morgan interests. An official statement says that the separate corporate existence of the several companies will continue, but T. E. Mitten will be made president of all. All shares owned by the company will be vested in the hands of trustees to secure unity of management and operation, and it is stated that whenever a feasible plan shall be formulated for a consolidation of all the surface lines in Chicago it can be carried out, so far as the South side lines are concerned, from a practical standpoint. The entire capitalization involved in this consolidation is \$50,735,000; the mileage is 411, and the number of passengers carried per year by the roads is 318,240,000.

In the snowstorm of December 25 and 26, which was severe throughout the coast regions of New England and the middle states, passengers were kept in stalled trains within the limits of New York City 10 hours or more, and between Wilmington, Del., and Baltimore, Md., a number of through passenger trains

were stuck in the snow all night. Philadelphia despatches gave the official depth of snow in that city as 23 inches, and a depth of 18 inches was reported from many places in that region. In the region of New York City and in New England the wind was very high. The New York City blockade referred to was on one of the electric lines of the Brooklyn Rapid Transit Co., between Brooklyn and Coney Island, and the trouble came from a slight derailment, due to ice and snow packed on the track, which was so quickly followed by drifts that the company was unable to relieve the several trains that were delayed until after a long siege. The derailment occurred about midnight and it was 7 or 8 o'clock in the morning before anyone left the cars, although the place was not very far from dwellings. The passengers from two or three trains were gathered in four or five cars and the cars were not without heat. At Harrisburg, Pa., Sunday night, over 400 passengers were lodged in hotels, some of them at the expense of the railway companies. The express trains leaving Washington for New York at midnight Saturday arrived at their destinations about 11 hours late, and the corresponding southbound trains suffered about the same delay. In train 79, from New York, which was stalled south of Wilmington, passengers suffered greatly from cold, the fires in the locomotives, which should have furnished steam for the cars, having been drawn, it is said, because of a lack of water. In the region of Elkton, Md., the Pennsylvania and the Baltimore & Ohio had 2,000 men shoveling at the drifts. In Lancaster county, Pa., 100 miles of trolley lines were buried under 16 inches of snow, and similar reports came from western Pennsylvania. Trains were delayed 12 hours and more on the railways in New Jersey near Philadelphia. On the New York, New Haven & Hartford the telegraph wires were down in many places, and the controlled manual block signaling apparatus was out of order, so that trains had to be stopped at every block signal station to receive a clearance card. Wires were useless throughout southeastern Massachusetts. At Boston the tide was the highest since 1851, and parts of Atlantic avenue were submerged.

Wood Preservers' Association.

The sixth annual meeting of the Wood Preservers' Association will be held at the Auditorium hotel, Chicago, on January 18, 1910. The following papers will be read and discussed: "What Per Cent. of Creosote Oil Can Be Withdrawn from Wood by Subsequent Vacuum?" J. B. Card, superintendent, Chicago Tie & Timber Preserving Co.; "What Effect Does the Time of Cutting Timber Have on the Rate of Seasoning and Treatment of Same?" J. C. Williams, superintendent wood preserving department, Barber Asphalt Paving Co.; "Advantages and Economy of Various Retort Doors," Samuel M. Rowe; "Results Obtained by Treating with Crude Petroleum," C. Marshall Taylor, in charge department of chemistry and tests, International Creosoting & Construction Co.; "Precautions to Be Observed to Prevent Fires at Plants," H. J. Whitmore, superintendent M., K. & T. Wood Preserving Works; "Inflammability of Treated Timber," H. M. Rollins, superintendent T. & N. O. Wood Preserving Works; "Proper Grouping of Timbers for Treating," F. J. Angier, superintendent timber preservation, C., B. & Q. R. R. Co.; "Economics of Cables, Electricity or Locomotives in Moving Materials at Plant," Andrew Gibson, superintendent timber preservation, Northern Pacific Railway Co., Brainerd, Minn.; "Advantages and Economy of Various Retort Doors," David Allerton, superintendent Kettle River Quarries Co.; "Amounts of Various Antiseptics Required Per Cubic Foot to Obtain Good Results for Various Purposes," R. L. Allardyce, general superintendent International Creosoting & Construction Co.

Western Canada Railway Club.

The regular monthly meeting will be held in the Royal Alexandra hotel, Winnipeg, Man., January 10. A paper entitled "The Stores Department and Its Relation to the Other Departments" will be read by A. E. Cox, storekeeper, Canadian Northern. The discussion on "Water Supply" and "Copper versus Steel Fireboxes" will also be continued.

Traffic News.

The National Industrial Traffic League has issued circulars urging its members to secure the support of their congressmen and senators for the Burkett bill, which would prohibit express companies from dealing in commodities of any kind.

The Rock Island and the St. Louis & San Francisco have reached an agreement to maintain joint ticket offices at several places, including Chicago, St. Louis, Kansas City and Minneapolis. The soliciting agencies of the roads, however, will be separate.

Commissioner E. E. Clark, of the Interstate Commerce Commission, has announced that a general investigation of the subject of milling in transit privileges will be held by the commission at Washington, beginning on January 14, at which all interested parties will be given a chance to present their views.

According to a press despatch from Albuquerque the Atchison, Topeka & Santa Fe will spend \$25,000 or more to demonstrate the practicability of dry farming in the wastes of New Mexico. Homesteaders in all parts of the territory will be aided. Prof. J. D. Tinsley, of the New Mexico Agricultural College, has resigned his position at the college to take charge of the work.

A conference of shippers was held in Chicago on December 21 at which a committee was appointed to take up with the Interstate Commerce Commission and the railways the question of rates on returned shipments. The practice of the railways in the past has been to return unsold or damaged shipments at half the regular rate. A recent ruling of the commission tends to restrict the privilege and the railways have considered abolishing it entirely. The chairman of the committee is W. J. Evans, secretary National Association of Agricultural Implement and Vehicle Manufacturers.

It is reported at Washington that the new code of demurrage rules that was accepted by the National Association of Railway Commissioners last month is to be adopted in Philadelphia February 1, and is finding favor in other places throughout the country, except in New England and Michigan. It is expected that the new code will be adopted at Chicago, though the free time to be allowed on grain held for reconsignment there will be made two days. The Wisconsin State Commission has already put the rules into effect on business subject to its authority, and it is believed that Minnesota and Indiana will soon take similar action.

The Wisconsin Merchants' and Manufacturers' Association has filed with the Wisconsin Railway Commission a general complaint against the rates charged by the following express companies: American, Adams, Northern and Western. The complainant demands that the rates of these companies be subjected to a general reduction of 30 to 40 per cent. and that their minimum rate be reduced from 25 to 15 cents. It is also alleged that the rates charged are 30 per cent. higher than those in Nebraska. The rates in effect in Nebraska were fixed by statute. Figures are given in support of the contention that the capitalization and earnings of the various companies are excessive.

The Texas Railway Commission has been holding a hearing regarding the relations between the lumber interests and the railways of Texas with a view to establishing rates which will enable the lumber manufacturers of Texas to sell their product in competition with those of Arkansas and Louisiana. It is claimed that the Texas producers are at a disadvantage in meeting competition because their tap line railways are not allowed by the law to receive divisions of the through rates. To ascertain the exact situation in Louisiana and Arkansas the Commission has employed R. A. Thompson, formerly its engineer, to make an investigation of the "tap" lines in these states and to report on their physical condition, the amount of their capitalization, their mileage and particularly on the divisions of their through rates which they receive. Mr. Thompson's report must be made by February 10 next.

REVENUES AND EXPENSES OF RAILWAYS.

MONTH OF OCTOBER, 1909.

(See also issues of Dec. 10, 17 and 24.)

Name of road.	Mileage operated at end of period.	Operating revenues.			Maintenance		Operating expenses.		General.	Total.	Net operating revenues (or deficit).	Outside operations net.	Taxes.	Operating income (or loss).	Increase (or dec.) income comp. with last year.
		Freight.	Passenger.	Total.	Way and structures.	Of equipment.	Traffic.	Trans- portation.							
Alabama & Vicksburg	143	\$111,093	\$40,402	\$151,495	\$24,320	\$27,700	\$3,490	\$45,374	\$5,240	\$106,124	\$56,111	\$603	\$4,250	\$101,874	\$1,861
Central New England	278	239,156	31,764	270,920	37,914	25,691	2,203	93,153	2,850	161,811	121,561	133	6,500	155,311	\$1,554
Charleston & Western Carolina	284	125,320	28,247	153,567	31,062	20,983	3,322	54,932	3,892	114,191	47,167	23	4,475	118,666	42,692
Chicago, Cincinnati & Louisville	284	113,720	25,743	139,463	30,387	19,735	9,087	58,641	5,778	123,628	24,276	—	3,405	127,033	22,845
Chicago, Peoria & St. Louis	255	133,251	36,092	169,343	25,017	17,632	6,271	44,139	5,090	132,186	44,139	—	4,150	136,336	39,989
Cincinnati Northern	248	97,465	16,226	113,691	14,860	18,951	2,427	38,945	2,861	78,444	40,631	—	4,100	82,544	51,744
Cleveland, Akron & Columbus	210	173,815	43,519	217,334	37,140	48,225	3,149	79,680	3,313	171,707	58,718	—	5,000	166,707	6,285
Colo., So. New Orleans & Pac.	265*	65,596	13,599	79,195	14,108	6,326	1,836	32,418	3,243	75,937	26,067	—	23	75,914	—
Cumberland Valley	162	191,887	60,502	252,389	29,388	24,796	3,709	71,037	3,243	134,202	128,989	\$603	4,084	128,985	31,744
Detroit & Mackinac	347	79,480	23,272	102,752	16,766	14,145	1,905	31,037	2,333	66,630	42,212	—	6,850	60,782	35,229
Eastern Ry. Co. of New Mexico	191	110,721	35,852	146,573	30,226	23,804	5,452	70,045	3,004	137,531	39,570	—	2,727	134,804	9,042
Georgia Railroad	227	51,762	39,852	91,614	17,637	12,874	933	21,758	2,335	55,537	40,888	—	3,481	52,056	37,407
Georgia Southern & Florida	307	235,885	65,710	301,595	34,060	56,128	9,249	101,238	6,328	201,503	109,908	1,655	1,768	199,735	18,074
Gulf & Ship Island	395	123,278	59,880	183,158	24,799	45,488	8,906	65,807	7,560	150,920	57,842	—	8,066	142,854	18,074
International & Great Northern	1,159	649,592	167,428	817,020	92,476	32,500	1,466	105,229	2,940	583,961	278,553	—	4,852	575,109	80,019
Louisiana Ry. & Nav. Co.	350	135,866	52,404	188,270	24,625	13,778	4,339	48,782	5,009	96,218	26,952	—	3,600	92,618	18,329
Louisiana Western	324	90,142	29,681	119,823	15,462	33,787	5,749	48,782	6,550	110,240	87,681	—	5,000	105,240	81,028
Midland Valley	403	119,264	28,966	148,230	23,129	13,908	1,979	30,923	4,876	78,585	47,807	—	8,000	69,585	23,008
Mobile, Jackson & Kansas City	196	251,113	54,184	305,297	24,758	13,908	1,979	30,923	8,740	94,781	63,011	—	8,500	86,281	3,254
New Orleans & North Eastern	112	226,480	30,237	256,717	32,058	53,171	7,939	104,171	10,146	208,085	123,361	—	8,500	199,585	35,274
New York, Philadelphia & Norfolk	151	168,881	53,089	221,970	24,318	23,637	2,974	85,210	8,119	184,617	90,005	—	6,250	178,367	13,713
Pecos & Northern Texas	152	130,535	22,473	153,008	15,481	18,325	1,730	36,758	3,870	139,137	109,125	10,125	1,317	137,820	87,683
Pittsburgh, Shawmut & Northern	240	91,950	60,011	151,961	15,448	24,701	1,090	32,304	4,443	82,421	76,060	—	1,369	81,051	39,880
Richmond, Fredericksburg & Potomac	83	120,639	27,773	148,412	30,271	13,806	6,551	53,252	4,572	110,567	59,392	—	2,000	108,567	37,520
Santa Fe, Prescott & Phoenix	319	84,660	28,296	112,956	19,932	9,602	2,145	30,225	5,416	67,332	52,702	219	5,142	62,444	54,973
Southern Indiana	257	117,346	14,423	131,769	16,054	19,477	1,801	42,778	5,017	75,070	72,933	—	6,929	68,141	43,956
Southern Kansas Railway of Texas	125	122,540	21,933	144,473	16,334	13,803	3,325	103,653	4,179	139,729	119,758	—	3,333	136,396	71,160
Spokane, Portland & Seattle	420†	253,642	59,596	313,238	63,624	27,536	3,842	61,689	7,550	204,683	44,695	495	4,199	200,484	44,695
Tennessee Central	292	98,746	33,033	131,779	17,166	18,163	2,235	29,982	2,886	88,710	47,257	—	2,964	85,746	18,914
Texas Central	268	69,992	30,134	100,126	12,734	11,512	2,235	35,957	4,281	59,844	29,805	—	4,000	55,844	25,298
Toledo, Peoria & Western	248	63,482	38,106	101,588	17,330	18,735	2,123	35,957	2,986	77,121	47,257	—	6,000	71,121	11,298
Vicksburg, Shreveport & Pacific	171	82,802	41,154	123,956	22,251	22,084	3,623	36,869	4,260	89,087	46,017	—	10,000	79,087	14,978
Virginian Railway	444†	125,128	16,567	141,695	30,499	30,245	6,077	45,774	7,189	119,784	29,727	448	—	119,336	20,175
Alabama & Vicksburg	143	348,757	157,560	506,317	93,881	88,730	14,163	170,181	2,506	357,461	155,999	—	17,000	340,461	48,405
Central New England	278	136,536	583,566	720,102	164,226	86,566	6,638	277,773	12,673	567,876	420,690	—	26,000	541,876	154,401
Charleston & Western Carolina	284	359,697	109,876	469,573	107,089	62,622	11,424	169,997	14,098	377,110	180,650	—	17,900	359,210	103,021
Chicago, Cincinnati & Louisville	284	399,492	129,379	528,871	110,969	85,313	35,863	234,826	23,563	473,654	80,650	—	13,620	460,034	93,113
Chicago, Peoria & St. Louis	255	447,660	130,491	578,151	83,483	122,487	25,445	201,618	20,410	462,443	142,334	—	16,600	445,843	125,734
Cincinnati Northern	248	338,379	91,126	429,505	68,629	78,013	11,993	134,929	10,390	303,954	146,873	—	16,400	287,554	61,985
Cleveland, Akron & Columbus	210	608,462	198,878	807,340	136,952	194,743	12,040	261,726	14,779	620,240	241,872	—	20,000	598,368	221,872
Colo., So. New Orleans & Pac.	265*	98,476	22,694	121,170	13,196	89,363	16,031	56,150	6,076	102,054	25,269	—	22	95,984	—
Cumberland Valley	162	706,192	236,222	942,414	131,196	89,363	16,031	268,767	22,121	527,482	455,669	2,405	16,334	441,148	52,954
Detroit & Mackinac	347	286,967	114,762	401,729	67,393	61,811	8,940	126,625	10,026	274,795	150,499	1,951	27,798	247,000	124,652
Eastern Ry. Co. of New Mexico	191	388,660	243,888	632,548	110,463	94,332	4,488	263,378	28,635	521,596	193,150	204	10,909	411,697	182,445
Georgia Railroad	227	191,256	147,172	338,428	74,029	39,361	3,613	90,618	9,726	217,347	140,952	—	7,103	209,444	127,069
Georgia Southern & Florida	307	688,964	269,784	958,748	139,758	154,327	37,255	380,973	28,265	740,578	272,225	6,471	32,265	708,313	169,489
Gulf & Ship Island	395	417,001	233,866	650,867	81,129	147,190	22,101	257,799	33,493	541,713	195,283	—	19,408	521,111	11,155
International & Great Northern	1,159	2,049,682	663,833	2,713,515	130,495	117,322	4,832	201,089	28,779	482,517	216,086	—	84,000	398,517	196,678
Louisiana Ry. & Nav. Co.	350	331,921	63,222	395,143	48,295	466,829	72,126	111,651	88,398	234,299	652,996	—	14,400	220,899	568,996
Louisiana Western	324	449,210	198,807	648,017	63,629	50,941	19,320	177,050	20,785	351,695	88,390	—	20,000	231,695	73,990
Midland Valley	403	305,758	110,157	415,915	74,892	87,978	7,631	174,410	26,955	393,232	288,357	—	32,000	261,232	38,413
Mobile, Jackson & Kansas City	196	270,004	113,176	383,180	82,298	50,516	8,464	158,706	18,192	306,333	131,555	—	32,000	174,333	70,433
New Orleans & North Eastern	112	919,005	207,873	1,126,878	113,060	182,388	33,920	380,970	39,826	750,164	357,898	—	14,527	735,691	49,430
New York, Philadelphia & Norfolk	151	828,668	153,660	982,328	107,209	184,362	13,736	385,706	38,813	720,517	433,467	—	33,600	686,917	324,298
New York, Susquehanna & Western	151	570,003	233,301	803,304	123,703	85,814	6,493	202,122	15,951	552,083	241,971	—	45,266	506,847	105,404
Pecos & Northern Texas	152	442,900	100,263	543,163	84,158	70,965	6,337	145,938	15,411	322,809	87,478	—	5,134	277,675	9,866
Pittsburgh, Shawmut & Northern	240	332,283	42,750	375,033	55,871	108,613	4,472	116,783	13,693	294,432	87,478	—	6,321	288,051	73,963
Richmond, Fredericksburg & Potomac	83	364,015	215,608	579,623	125,001	78,719	9,811	211,555	18,406	443,432	207,736	—	800	442,632	81,157
Santa Fe, Prescott & Phoenix	319	404,798	159,229	564,027	76,795	64,340	25,468	209,515	16,713	440,104	171,300	470	20,571	419,533	151,199
Southern Indiana	257	318,300	116,029	434,329	62,200	63,861	9,988	163,350	20,292	273,181	206,418	—	164	206,507	177,907
Southern Kansas Railway of Texas	125	438,059	86,965	525,024	61,695	80,111	6,985	163,350	14,019	273,070	212,498	—	27,714	245,384	120,259
Spokane, Portland & Seattle	420†	285,827	1,169,917	1,455,744	175,953	87,990	11,239	353,535	22,739	651,456	186,690	3,029	95,810	555,646	425,680
Tennessee Central	292	951,746	144,749	1,096,495	64,923	60,234	15,007	161,276	32,740	334,180	158,680	—	11,962	322,218	59,003
Toledo, Peoria & Western	248	173,971	132,244	306,215	79,408	62,903	6,538	107,576	12,183	281,608	114,553	—	16,000	265,608	98,388
Vicksburg, Shreveport & Pacific	171	229,556	151,991	381,547	68,798	64,746	8,948	133,071	12,945	288,509	114,553	—	25,200	263,309	26,255
Virginian Railway	444†	274,159	159,727	433,886	76,790	85,177	13,618	134,974	16,664	327,221	142,078	2,100	38,000	289,221	116,470

INTERSTATE COMMERCE COMMISSION.

Transporting Property Free as Baggage.

In reply to an inquiry of a passenger officer of a western road, Commissioner Harlan, of the Interstate Commerce Commission, has written the following letter:

"I beg to acknowledge the receipt of your letter in which you state that the members of some fraternal order, association or society, sometimes desire to travel as a party on a special train in a private car, at your regular published tariff fares, and desire also to have carried in the baggage cars, free of charge, packages or crates of fruits, farm products or of printed matter for free distribution at a convention or at stopping points on the journey, with the object of advertising the resources of the section in which they are particularly interested. I am unable to find any language, either in Section 1 or in Section 22, of the act to regulate commerce, that in my personal opinion can be reasonably construed as permitting the free transportation of property under the circumstances stated."

Reparation on Hard-Wood Lumber Shipments.

J. C. Kindelon, doing business under the name of the Standard Hardwood Lumber Co., v. Southern Pacific Company et al. and 41 other cases. Opinion by Commissioner Clements.

Defendants' prior rate of 85 cents per 100 lbs. for the transportation of hard-wood lumber in carloads from various points along and west of the Mississippi river to San Francisco, Cal., and other Pacific terminals, found unreasonable; but their present rate of 75 cents per 100 lbs. for such transportation held reasonable. Reparation awarded. *Burgess v. Transcontinental Freight Bureau*, 13 I. C. C., 668, cited. (17 I. C. C., 251.)

STATE COMMISSIONS.

The Iowa Railway Commission has fixed January 1, 1910, as the date on which the uniform code of demurrage rules adopted by the National Association of Railway Commissioners will be put into effect in Iowa.

The New York Public Service Commission, Second district, has denied the application of the New York Central & Hudson River, the Erie, the Delaware, Lackawanna & Western and the Lehigh Valley for a rehearing in the matter of the application of the Buffalo Frontier Terminal Railway. On July 30 the commission granted a certificate of public convenience and necessity to this company, which proposes to build a freight belt line about the city of Buffalo. At that time the application was opposed by the railways mentioned and also by the Buffalo Connecting Railway, which also sought permission to build a freight belt line.

COURT NEWS.

Judge Cotteral, of the federal court at Guthrie, Okla., on December 21 issued a temporary injunction restraining the state auditor of Oklahoma from proceeding with the collection of the gross earnings tax of Oklahoma. The law imposing this tax is attacked by the Atchison, Topeka & Santa Fe, the Chicago, Rock Island & Pacific, the St. Louis & San Francisco, the Gulf, Colorado & Santa Fe and the Missouri, Kansas & Texas as unconstitutional on the ground that it imposes a tax on interstate commerce.

The St. Louis, Iron Mountain & Southern has filed a demurrer, which has been sustained, in the suit brought against it at Little Rock, Ark., by Wood Roberts for \$48,000 for alleged discrimination against him in the matter of switching charges. Mr. Roberts brought his suit under a state law passed in 1887. The railway based its demurrer on the ground that the railway act, passed by the legislature in 1899, repealed the act of 1887. The court in sustaining this contention said that under the existing law the state must bring suit for the benefit of the person injured where there has been discrimination and that the individual cannot bring suit.

Railroad Officers.

ELECTIONS AND APPOINTMENTS.

Executive, Financial and Legal Officers.

C. F. Krebs, comptroller of the Illinois Central and the Indianapolis Southern at Chicago, has resigned.

R. H. Baker, president and general manager of the Trinity & Brazos Valley at Houston, Tex., has resigned.

C. L. Daniel has been appointed auditor and general freight and passenger agent of the Pan-American, with office at Gamboa, Oaxaca, Mex.

C. N. Whitehead, secretary of the Missouri, Kansas & Texas, with office at New York, has been elected treasurer, succeeding C. G. Hedge, retired.

Wm. H. Phelps, who for many years has represented the Missouri Pacific System at Jefferson City, Mo., during sessions of the Missouri legislature, has retired.

B. B. Mitchell, general freight traffic manager of the New York Central Lines at Chicago, has been appointed assistant to vice-president, with office at New York, and his former office has been abolished.

John F. Wallace, chairman of the board of directors of Westinghouse, Church, Kerr & Co., has been elected a vice-president of the Kansas City, Mexico & Orient, with office at New York, succeeding George Crocker, deceased.

Operating Officers.

C. B. Pratt, chief clerk to the general manager of the Chicago, Rock Island & Pacific, has been appointed assistant to the general manager, with office at Chicago.

T. C. Collopy has been appointed an assistant superintendent of the Oregon Short Line, with office at Pocatello, Idaho, succeeding J. D. Rayle, assigned to other duties.

J. M. Sommers, trainmaster of the Missouri Pacific at Olatomie, Kan., has been appointed superintendent of the Joplin division, with office at Nevada, Mo., succeeding W. E. Brooks, transferred.

F. G. Weeks, trainmaster in charge of the Council Bluffs yards of the Chicago, Rock Island & Pacific at Council Bluffs, Iowa, has been appointed trainmaster of the Illinois division, with office at Rock Island, Ill. G. W. Heggenberger succeeds Mr. Weeks.

T. H. Sullivan, trainmaster of the Illinois Central at Dubuque, Iowa, has been appointed superintendent of the Dubuque division, with office at Dubuque, succeeding F. J. Bechely, resigned. W. Atwill, trainmaster of the Omaha and Cherokee divisions, with office at Fort Dodge, Iowa, succeeds Mr. Sullivan, and N. P. Mills succeeds Mr. Atwill.

Traffic Officers.

W. J. Lynch, passenger traffic manager, and G. H. Ingalls, freight traffic manager of the Lake Shore & Michigan Southern and other New York Central lines west of Buffalo, N. Y., have had their authority extended over the Pittsburgh & Lake Erie, both with offices at Chicago.

C. Hartigan, general agent of the New York Central & Hudson River at Montreal, Que., has been appointed general passenger agent of the Rutland Railroad, with office at Rutland, Vt., succeeding F. E. Barbour, resigned. Neil Mooney succeeds Mr. Hartigan, with office at Montreal.

Hal S. Ray, who recently resigned as assistant general passenger agent in charge of advertising of the Chicago, Rock Island & Pacific, has been reappointed to that position, with office at Chicago. E. H. Woodman, advertising manager, has resigned and will establish a branch of the H. E. Leson advertising agency in Chicago.

Incident to the dissolution of the Rock Island-Frisco merger the following appointments have been made by the Chicago, Rock Island & Pacific: A. B. Spencer has been retained as

general agent at Amarillo, Tex.; I. G. Thompson has been appointed commercial agent at Ft. Worth, Tex.; T. W. Wilhelm has been retained as commercial agent at Dallas, Tex.; H. C. Callahan has been appointed commercial agent at Houston, Tex., and J. C. Brooks has been appointed commercial agent at San Antonio, Tex. D. J. Bermingham has been retained as commercial agent at Indianapolis, Ind.

Engineering and Rolling Stock Officers.

H. E. Henderson has been appointed to the new position of superintendent of bridges and buildings of the Pan-American.

J. B. Berry, supervising engineer of the St. Louis & San Francisco, with office at St. Louis, Mo., having resigned, that office is abolished. The title of M. C. Byers, chief engineer, will be changed to chief engineer-operation.

L. C. Heilman has been appointed supervisor of signals of the Rock Island at Cedar Rapids, Iowa, having jurisdiction over the Northern district, succeeding G. W. Trout, transferred to Trenton, Mo., as acting supervisor of signals on the Missouri division.

C. M. Byrd has been appointed road foreman of engines of the Atchison, Topeka & Santa Fe Coast Lines, with jurisdiction over the Second district of the Albuquerque division, with office at Winslow, Ariz., and will perform such duties as are assigned to him by the master mechanic of the Third district.

Ben Johnson, whose appointment as assistant locomotive superintendent of the United Railways of Havana at Havana, Cuba, was recently announced in these columns, was born October 15, 1858, at Ithaca, N. Y. He graduated from Cornell University in 1878 and began railway work in June, 1879, as machinist on the Atchison, Topeka & Santa Fe, and was in the locomotive department of that company until August, 1888. He went to the Westinghouse Air Brake Co. in 1888 as inspector, remaining in that position for 10 years. He returned to railway work in December, 1898, as master mechanic of the Eastern division of the Atchison, Topeka & Santa Fe, at Topeka, Kan., and from May 19, 1900, to November, 1901, was engineer of tests on the same road. In November, 1901, he left this company to become superintendent of machinery on the Mexican Central Railway, which is now part of the National Railways of Mexico, which position he held until July 1, 1908.



Ben Johnson.

R. F. Kilpatrick, assistant superintendent motive power and car department of the Denver & Rio Grande at Denver, Colo., has not been appointed master mechanic of the Western Pacific, with office at Stockton, Cal., as was erroneously reported in our issue of December 17. The office of assistant superintendent of motive power and car department on the Denver & Rio Grande has been abolished. W. J. Bennett has been appointed master mechanic of the Utah lines, with office at Salt Lake City, Utah, succeeding A. H. Powell, resigned.

Purchasing Officers.

B. T. Jellison has been appointed purchasing agent of the Chesapeake & Ohio, with office at Richmond, Va., reporting to the vice-president and general manager, succeeding W. F. La Bonta, who will perform the duties of fuel agent. The general storekeeper will report to the purchasing agent.

Special Officers.

W. B. Ross has been appointed secretary of the pension

board of the Chicago, Rock Island & Pacific, with office at Chicago. See item in another column.

OBITUARY.

E. T. Evans, formerly vice-president of the Anchor Line, the Pennsylvania's lake line, died recently at his home in Buffalo, N. Y., at the age of 72 years.

Dumont Clarke, president of the American Exchange National Bank, and a director of a number of railways, died at his home in Dumont, N. J., on December 26. Dumont Clarke was born in Newport, R. I., in 1840. His grandfather was the founder of the National Bank of Rhode Island. The Clarke line is unbroken back to the shipmaster of the historic craft that anchored off Plymouth Rock. Dumont Clarke's people educated him for the church. The unexpected death of his father prevented the ordination of the young man. This occurred when the son was 23 years old. The story of California was enchanting just then. Young Clarke concluded to take his patrimony and go west. He made the journey in a wagon, starting from Omaha. When he reached California he became a merchant. His stay, however, was brief. He sold out at the expiration of his third month and returned to Newport. He began his banking career there, entering his grandfather's bank as cashier. Newport was not the fashion center then that it afterward became. Clarke fretted in the quietude of that atmosphere. There was too much pent-up Utica in the town to satisfy him. He came to New York in 1863 and at once took a place in the bank of which he became president. He began as check clerk. Six months later he was advanced to the head of the check department. Not long after that he was appointed demand-loan clerk. February 8, 1868, he was assistant cashier; August 30, 1878, he was cashier; January 9, 1883, he was elected a director; May 6, 1887, he was elected vice-president, and January 9, 1894, he became the president.

Long before this he had married. His house was far up on the island—in fact, when he went to live in what later became 155th street the place was in the country. Mr. Clarke liked the country, for, in spite of the intention to make him a preacher, in spite of his financial cares, he was at heart a farmer. His fondness for the scent of new-mown hay, his liking for the field and for the products of the soil grew on him. In 1872, as his farm was transformed into 155th street, Mr. Clarke broke away from Manhattan, crossed the Hudson and settled in the old Dutch borough of Schraalenburg, N. J. In 1889 the neighbors changed the name of the borough to Dumont, in honor of their fellow-farmer. In 1899 Mr. Clarke was elected mayor of Dumont, and was re-elected without opposition. On the expiration of his second term he declined a third. His will was law in the matter, but it was expressly understood by the people that, if the time ever came when they could not unanimously agree on any other candidate, Mr. Clarke was to consent to stand again, for it is considered as certain that the town will always be agreed on Mr. Clarke.

As bank president Mr. Clarke was one of the earliest arrivals every business morning in the financial district. An occasion, however, that ever detains him in the city over night is so far back in the calendar that it cannot be placed. Mr. Clarke's favorite mode of travel about his farm and across the meadows and uplands is the bicycle. He was a good reader and a judge of the best literature. He was the father of nine children, the eldest son being vice-president of the bank.

If Mr. Clarke had adopted politics as his profession he would have been successful. He never forgets a name or a face. He also had the rare gift of saying "no" graciously. Mr. Clarke's work for railways was as a director and as a man who was selected to protect the interest of others and to untangle the knot that others had gotten some railway company into. He was a member of numerous reorganization committees and was at the time of his death director of, among other companies, the American Locomotive Co., Commercial Cable Co., the Delaware & Hudson Co., the Hudson Companies, the Long Island Railroad, the Mackay Companies, the Manhattan Railway and the New York, Brooklyn & Manhattan Beach Railway.

Railroad Construction.

New Incorporations, Surveys, Etc.

CALIFORNIA ROADS.—Surveys are said to be under way for an electric line from Redwood City, Cal., via Woodside, over the mountain to La Honda and the big basin. The cost of the line is estimated at \$1,000,000. A. H. Lohman, San Francisco, is in charge of the surveys.

According to press reports from Fresno, Cal., Gen. W. H. H. Hart, San Francisco, is back of a project to build a line from Fresno southwest to Coalinga, 60 miles, with a branch north into the Minaret country in Madera county.

CENTRAL KANSAS INTERURBAN.—Organized in Kansas, with \$500,000 capital, to build a line from Newton, Kan., north via Goessel, Spring Valley, Canton, Roxbury and Gypsum City to Salina and Abilene, 80 miles. O. Morshead, chief engineer, Newton.

NEVADA ROADS.—The Nevada United Mines Co., Denver, Colo., is said to be making plans to build 18 miles of line to connect its mine at Ward, Nev., with the Nevada Northern at Ely.

NORTHERN QUEBEC COLONIZATION.—According to press reports application will be made by this company to build from Tadousac, Que., to Hannah bay, Ont., with a branch line. Smith & Johnston, Ottawa, are solicitors.

OREGON RAILROAD & NAVIGATION Co.—Contract is said to have been given to Twohy Brothers, Spokane, Wash., and work is now under way eliminating curves and reducing grades between The Dalles, Ore., and Des Chutes. The cost of the improvements is said to be \$600,000.

This company has work authorized and under way in Oregon aggregating about 365 miles.

PITTSBURGH & GREAT LAKES CONNECTING.—Incorporated in Pennsylvania, with \$120,000 capital, to build from Elwood City, Lawrence county, Pa., to a point near Portersville, in Butler county, where connection is to be made with the Western Allegheny, 12 miles. J. R. Snyder, president, Pittsburgh. The directors include: C. J. Boak, G. T. Snyder and I. Boak, Pittsburgh; C. S. Armour, Girard; W. H. Evans, Baltimore; R. G. Boak and C. H. Akens, New Castle, and P. H. Sechler, Butler.

QUITMAN & GREAT NORTHERN.—See St. Louis, Paris & Gulf.

ST. LOUIS, PARIS & GULF.—This is the new name of the Quitman & Great Northern. Plans made to build from Paris, Tex., near the Red river, south to Winnsboro, 60 miles, and eventually from Winnsboro southeast to Burr's Ferry, an additional 200 miles. Work is under way on the first 60 miles. Bids are wanted for 10-mile sections to complete the line. Surveys made and partly graded to Paris. M. J. Healy, president and general manager, Mineola, Tex. (See St. Louis, Texas & Gulf, Nov. 5, p. 895.)

TOLEDO, NAPOLEON & LIMA.—Incorporated in Ohio, with \$100,000 capital, to build from Toledo, Ohio, to Lima. The incorporators include: M. M. Dailey, A. D. Bishoff, N. W. Gillette and M. E. Donaldson.

UNION FLAT.—According to press reports incorporation has been granted this company, with a capital of \$250,000 and headquarters at Tacoma. The plans call for a line from a point on the Oregon Railroad & Navigation Co., in Whitman county, easterly via Willow creek and Alkali Flat to a point near Wilcox, thence southeasterly following the Union Flat valley to a point near Uniontown, about 48 miles. This is said to be a project of the Harriman lines. The incorporators include W. Christian, F. M. Lambor and G. P. Wright.

WASHINGTON ROADS (ELECTRIC).—According to press reports a company is being organized with a capital of \$500,000 to build an extensive system of interurban lines. The promoters include: R. F. Lytle, A. L. Paine and E. O. McGlauffin, all of Hoquiam, Wash.; W. H. Abel and E. Wheeler, Montesano; A. M. Abel and P. S. Locke, Aberdeen.

Railroad Financial News.

ATLANTIC COAST LINE.—Stockholders are to vote January 26 on the question of issuing \$5,040,000 additional stock to be offered at par to stockholders. The proceeds are to be used to buy at 97½ the \$5,000,000 4 per cent. B certificates of indebtedness.

BOLIVIA RAILWAY.—The company, through arrangements with Speyer & Co., New York, have sold to the Banque de Paris et des Pays Bas, of Paris, \$7,500,000 first mortgage 5 per cent. bonds.

CHICAGO CITY RAILWAY.—See an item in regard to this company under General News.

CLEVELAND RAILWAYS (ELECTRIC).—Judge Tayler has made his report on the Cleveland railways, and places a value on the physical property of \$17,511,306, and a value on the franchise of \$3,615,844, a total of \$21,127,150. The valuation urged by Mayor Johnson was \$12,000,000.

DELAWARE, LACKAWANNA & WESTERN.—This company has sold to Drexel & Co., Philadelphia, its holding of Lehigh Valley stock amounting to 20,000 shares (par value \$50).

DETROIT, TOLEDO & IRONTON.—The protective committee, Otto T. Bannard, chairman, says that a majority of the general lien and divisional first mortgage 4 per cent. bonds have been deposited with the committee, and the time for depositing bonds has been extended to include January 10, 1910. The receivers have notified the Ohio Railroad Commission that they would apply for authority to issue \$1,000,000 additional receivers' certificates for improvements.

GRAND TRUNK.—This company is to apply to the Canadian parliament for authority to buy and sell securities issued by the Ottawa Terminals Railway and by the Grand Trunk Pacific Terminal Elevator Co.

KANSAS CITY, MEXICO & ORIENT.—By request of a number of American stockholders and of the London finance committee, E. Dickinson, general manager of the K. C., M. & O., and J. T. Odell, vice-president of the Bessemer & Lake Erie, have recently made a report on the property and its prospects.

LEHIGH VALLEY.—See Delaware, Lackawanna & Western.

MINNEAPOLIS, ST. PAUL & SAULT STE. MARIE.—Wm. A. Read & Co., of New York, are offering a block of the Soo's leased line 4 per cent. stock certificates, of which there are outstanding \$10,262,300, at a price to yield about 4.40 per cent. These certificates were issued in exchange for an equal amount of preferred stock of the Wisconsin Central, and the interest on them is guaranteed by the Minneapolis, St. Paul & Sault Ste. Marie.

NORTHERN SECURITIES Co.—The directors have declared a dividend of 2½ per cent. on the capital stock, payable January 10, 1910. From 1906 to 1908 annual dividends of 5 per cent. were paid, but in January, 1909, 4 per cent. was paid.

SEABOARD AIR LINE.—The executive committee has been increased from eight to nine members by the addition of F. Hugh Brown.

UNDERGROUND ELECTRIC OF LONDON.—*The Commercial and Financial Chronicle* says in part: "We are officially informed that application will be made in the ensuing session of parliament to amalgamate the Great Northern, Piccadilly & Brompton; the Charing Cross, Euston & Hampstead, and the Baker Street & Waterloo." These three companies, now controlled by the Underground Electric, are operated separately.

According to a press despatch from Prague, Bohemia, December 25, a collision between a passenger train and a freight at Uhersko, near Chotzen, resulted in killing 10 persons and seriously injuring 28.

Supply Trade Section.

G. E. Watts, Atlanta, Ga., has been appointed southern representative of the R. D. Nuttall Co., Pittsburgh, Pa.

The American Locomotive Co. has leased a building to be built at Michigan boulevard and Twenty-fifth street, Chicago, for its automobile business.

The Isthmian Canal Commission will receive bids until January 6 on cypress water tanks, manganese steel castings, steel castings, bolts, nuts, lock washers, etc. (Circular No. 550.)

Middendorf, Williams & Co., Baltimore, Md., dealers in bonds, announce that they have secured the services of Charles Turner Williams, who will be associated with the company after January 1.

J. F. Wallace, chairman of the board of directors of Westinghouse, Church, Kerr & Co., New York, has been elected vice-president of the Kansas City, Mexico & Orient, to succeed the late George Crocker.

The Sherwin-Williams Co., Cleveland, Ohio, has increased its capital from \$6,000,000 to \$8,000,000. A white lead works has recently been opened in Chicago by this company and additional branches are being contemplated.

The Mt. Vernon Car Manufacturing Co., Mt. Vernon, Ill., has let the contract for its new steel car plant to the McClintic-Marshall Construction Co., New York. This plant was mentioned in the *Railroad Age Gazette* of August 13.

The F. H. Niles Car Co., Chicago, whose incorporation was mentioned in the *Railroad Age Gazette* of December 11, 1908, has increased its capital stock from \$50,000 to \$500,000 and has changed its name to the Blue Island Rolling Mill & Car Co.

The Evens & Howard Fire Brick Co., St. Louis, Mo., is just completing two new kilns at its Gregg factory, which will increase the company's capacity about 350,000 brick per month. Two oblong down-draft kilns have also been added at the Howard plant to increase the capacity of the retort department and also to meet the increased business of the gas works division.

David Van Alstyne, vice-president of the American Locomotive Company, New York, has resigned. On December 24, W. H. Marshall, president of the company, issued the following circular: "David Van Alstyne, the vice-president in charge of manufacturing, having resigned, managers and other officials in this department will, on and after this date, report to James McNaughton, the vice-president in charge of sales."

F. I. Cordo, manager of the review department of the Griffin Wheel Co., Chicago, died at his home in Chicago December 20. He had been with the company for about 12 years, having held positions of manager of operations and general purchasing agent before his appointment to the position held at the time of his death. Before his connection with the Griffin Wheel Co. he was assistant general manager of the Chicago & North Western.

The Kalamazoo Railway Supply Co., Kalamazoo, Mich., reports that business has been very good during the last eight months of the present year. A new building, to be used as an erecting room, has been built in which several thousand dollars worth of new machinery has been placed. The company will probably build one or two more new buildings during the coming year, which same will require considerable additional machinery.

The United Service Co., New York, has been incorporated, with an authorized capital of \$100,000. The company will deal in railway supplies of all kinds, both steam and electric. On January 1 it will take over the business of the Railway Equipment Co. S. J. Dill, president; Henry Morgan, vice-presi-

dent; A. V. Wainright, secretary; W. D. Martin, treasurer; F. G. Robinson, purchasing agent. The entire stock of the United Service Co. is owned by the Susquehanna Railway Light & Power Co.

James W. Friend, of Pittsburgh, Pa., died on December 26 after a lingering illness. He was 64 years old. Mr. Friend was a familiar figure in the iron, steel and coal industries, and among the banking interests of Pittsburgh, having been vice-president of the Pressed Steel Car Company, the Western Steel Car & Foundry Company, one of the owners of the Clinton Iron & Steel Company, vice-president of the German National Bank of Allegheny, and a director in the Farmers' Deposit National Bank of Pittsburgh. The funeral took place on December 29 from his late residence in Pittsburgh.

The J. G. Brill Co., Philadelphia, Pa., has made an announcement regarding the Brill prizes for senior theses open to senior students of colleges, universities and technical schools of the United States. The subject of these theses will be "Design of an Electric Railway Car for City Service." There will be three prizes, the first being for \$250 and the John A. Brill gold medal, the second for \$150 and the third for \$100. These theses will be judged by a jury of three, consisting of a member of the American Street and Interurban Railway Association, the editor of the *Electric Railway Journal* and the vice-president of the J. G. Brill Co. All theses must be received on or before July 15, 1910.

The American Creosote Works, Inc., New Orleans, La., advises that E. L. Powell is now vice-president and W. Scott Bryan secretary of the company. This company is now building a new plant at Bossier, La., which will be completed and in operation by January 15. The yards of this plant will cover 35 acres, and there will be direct track connections with the Louisiana & Arkansas, the Louisiana Railway & Navigation Co. and the St. Louis Southwestern, while the Vicksburg, Shreveport & Pacific is at the present time planning track connections. The new plant will have a capacity of about 30,000,000 ft. per year. The largest creosoting cylinder is 9 ft. in diameter by 180 ft. long. The operation of the new plant will be in charge of W. W. Simmons, superintendent, and D. E. Roach, agent.

The Strauss Bascul & Concrete Bridge Co., Chicago, reports the following orders for railway bridges placed during the past year:

Florida East Coast, Fort Lauderdale, Fla., over New river, 63 ft. 6 in. single leaf, single track.
National Transcontinental, Winnipeg, Man., over Red river, 129 ft. 6 in. single leaf, double track.
Peoria & Pekin Union, Peoria, Ill., over Illinois river, 160 ft. single leaf, double track.
Erie (New York division), over Hackensack river, 152 ft. single leaf, double track.
Cape Cod Construction Co. (for N. Y., N. H. & H.), over Cape Cod canal, 160 ft. single leaf, double track.
Erie (N. Y., S. & W.), Little Ferry, N. J., over Overpeck creek, 55 ft. 5 in. single leaf, double track.
Chicago & Western Indiana, Chicago, over Calumet river, 186 ft. single leaf, double track.
Canadian Northern, Winnipeg, Man., over Assiniboine river, 92 ft. single leaf, double track.
Niagara, St. Catharines & Toronto, over Welland canal feeder, 46 ft. single leaf, single track.
Northern Pacific, over Duwamish river, Seattle, Wash., 160 ft. single leaf, single track.

A double leaf bridge with 200 ft. clear span bascule over the Neva river was ordered by the city of St. Petersburg, Russia. The construction of this bridge will consume several years' time, as it is an unusually monumental work. The 170-ft. double-track, single leaf bridge of the Chicago & North Western at Kinsey street, Chicago, was put in service during the month of September, 1908. It has an average record of 1,000 bridge movements per month and of 1,100 train movements per day. This bridge was put in service without any preliminary trying out, so that the above figures are favorable evidence of its efficiency. In a recent test it was found that an average of 30 h.p. was required for the operation of the structure, the minimum being 14 h.p. and the maximum 78.

TRADE PUBLICATIONS.

Graphite.—The Joseph Dixon Crucible Co., Jersey City, N. J., has just issued the eleventh edition of its "Graphite as a Lubricant." This is a standard work of this company and has been published for a number of years, being periodically thoroughly revised.

Inside Molders.—The S. A. Woods Machine Co., Boston, Mass., has just issued a new booklet illustrating and describing its inside molders. This booklet is especially valuable to those interested in woodworking machinery, as the descriptions and illustrations of these molders and their parts are excellent.

Westinghouse Diary.—The Westinghouse Companies' Publishing Department, Pittsburgh, has just issued its usual vest-pocket size diary, this one being for 1910. This diary has been published for the last six years, but the present edition contains much new matter in the way of general information regarding electrical machinery.

Bad Castings and How to Eliminate Them.—Edwin C. Washburn, Minneapolis, Minn., is distributing a small booklet with the above title, illustrating the use of a refractory material riser lining, manufactured by him, for the prevention of piping and shrinkage holes in castings. Numerous cuts to show the advantage of the riser lining are used as illustrations.

Furnaces.—The Rockwell Furnace Co., New York, has just issued bulletin G on annealing, hardening and tempering furnaces. The bulletin contains a number of very good half-tone illustrations, showing installations of these furnaces in railway shops. The general information given on this subject should be of particular interest to railway and general machine shop foremen.

Chicago, Milwaukee & St. Paul.—The menu cards in use on the dining cars of the Pioneer Limited, the St. Paul train between Chicago, St. Paul and Minneapolis, for the week December 21-27, were especially attractive. The cover bore a copy of a painting, "The Pioneer Limited," surrounded by holly. The blue inset carried the menu, which suggested a meal as attractive as the card.

RAILROAD STRUCTURES.

COLORADO SPRINGS, COLO.—An appropriation has been asked for a new station, but as yet no definite action has been taken in the matter.

DALLAS, TEX.—The Railroad Commission of Texas has issued its final order directing all the roads entering the city to erect and maintain a union station. Plans are to be submitted by March 1, 1910; work must be commenced within three months after the approval of the plans and must be pushed to completion with reasonable despatch. (Dec. 10, 1909.)

DURANT, OKLA.—The Missouri, Oklahoma & Gulf has let the contract to the Wisconsin Bridge & Iron Co., Milwaukee, Wis., for a 1,100-ft. bridge over the Red river.

HOOD RIVER, ORE.—The Oregon Railroad & Navigation Co. is to build a new passenger station at an estimated cost of \$20,000. The building will be of the standard type in use on the Harriman Lines and will be constructed of brick and stone.

MACKEY'S FERRY, N. C.—According to press reports, the Norfolk & Southern has completed the large trestle bridge over Albemarle sound.

SMITHVILLE, TEXAS.—The Missouri, Kansas & Texas has opened for business a new passenger station in Smithville.

SPOKANE, WASH.—The Oregon Railroad & Navigation Co., according to press reports, has completed its plans for a through girder bridge of three 80-ft. spans resting on four concrete piers, estimated to cost \$45,000.

TORONTO, ONT.—The Canadian Northern is said to have plans made to put up repair shops and a roundhouse in Toronto during the summer of 1910.

UTICA, N. Y.—According to press reports, plans are under way to put up a union passenger station in Utica.

Late News.

Incident to the dissolution of the Rock Island-Frisco merger a number of appointments have been made on the St. Louis & San Francisco and the Chicago & Eastern Illinois. Most of those appointed have been employed jointly by the Rock Island-Frisco lines and the Chicago & Eastern Illinois. C. A. Forrest, commercial agent at Chattanooga, Tenn., has been transferred to Atlanta, Ga. Fay Thompson, district passenger agent, and A. P. Matthews, traveling passenger agent at Atlanta, have been retained. R. E. Buchanan succeeds Mr. Forrest. D. F. McDonough, division freight agent, and B. R. Starnes, commercial agent at Birmingham, Ala., have been retained. J. R. McGregor, traveling passenger agent at Nashville, Tenn., has been appointed district passenger agent at Birmingham. F. L. Glasscock succeeds Mr. McGregor. W. Baker, commercial agent at Cape Girardeau, Mo., has been appointed division freight agent. T. O. Jennings, general agent freight department; A. B. Schmidt, general agent passenger department, and J. M. Jillich, traveling passenger agent at Chicago, have been retained; M. W. Burns, commercial agent at Milwaukee, Wis., has been transferred to Chicago, and H. E. Oram has been appointed a traveling passenger agent at Chicago. J. W. Kelley, division freight agent at Danville, Ill., succeeds Mr. Burns. L. G. Lucia succeeds Mr. Kelley, and O. B. Lozier, traveling passenger agent at Danville, has been retained. J. F. Govan has been appointed district passenger agent at Cincinnati, Ohio, and L. S. Muchmore, traveling passenger agent at Memphis, Tenn., has been transferred to Cincinnati. Ralph Bowden succeeds Mr. Muchmore. C. S. Hall, commercial agent at Louisville, Ky., has been transferred to Cincinnati, and J. M. Kirk succeeds Mr. Hall. H. A. Perkins, commercial agent at Chicago Heights, Ill., has been retained. G. W. Martin, general agent at Denver, Colo., has been retained. J. B. Morrow, southwestern passenger agent at Dallas, Tex., has been appointed district passenger agent. C. H. Morrill has been appointed commercial agent at Detroit, Mich. E. E. Dix, general agent at Ft. Scott, Kan., has been retained. Roy Robinson, general agent in the freight department at Ft. Smith, Ark., has been appointed division freight agent. W. L. Evans, district passenger agent at Jacksonville, Fla., has been retained. E. C. Hoag, commercial agent at Joplin, Mo., has been appointed division freight agent, and L. W. Price, division passenger agent, has been retained. E. F. Edgecomb, commercial agent, and W. C. Melville, traveling passenger agent at Kansas City, Mo., have been retained. J. C. Lovrien has been appointed a division passenger agent, and S. E. Oldham a traveling passenger agent at Kansas City. J. H. Doughty, commercial agent at Memphis, Tenn., has been retained. S. L. Rogers, general agent of the Chicago & Eastern Illinois at Nashville, Tenn., has been appointed general agent of the St. Louis & San Francisco also. S. S. Butler, general eastern freight agent at New York, has been appointed general eastern agent, with jurisdiction over freight and passenger traffic. R. S. Graham has been appointed district passenger agent at New York. I. T. Preston, general agent, and L. B. Washington, traveling passenger agent, at New Orleans, La., have been retained. H. C. Conley, division freight agent; C. O. Jackson, division passenger agent, and J. T. Cobb, traveling passenger agent at Oklahoma City, Okla., have been retained. D. L. Ewing has been appointed general agent, and C. B. Muxen has been appointed district passenger agent at Pittsburgh, Pa. G. H. Kummer, division freight agent at Salem, Ill., has been retained. A. D. Murray, general agent freight department, and F. J. Diecke, general agent passenger department at St. Louis, Mo., have been retained. J. W. Gantz has been appointed commercial agent, and E. G. Lamb has been appointed traveling passenger agent at St. Louis. C. W. Humphrey, northern passenger agent at St. Paul, Minn., has been appointed district passenger agent. H. W. Pinnick, traveling passenger agent at San Antonio, Tex., has been retained. W. C. Smith, general agent at Springfield, Mo., has been retained. W. L. Coleman has been appointed division freight agent at Tulsa, Okla. J. J. Fagan, commercial agent at Terre Haute, Ind., has been retained. E. E. Carter, division freight agent, and F. E. Clark, division passenger agent at Wichita, Kan., have been retained.

Equipment and Supplies.

LOCOMOTIVE BUILDING.

The Buffalo & Susquehanna has ordered 10 consolidation locomotives from the American Locomotive Co.

The Norfolk & Portsmouth Belt Line has ordered one six-coupled switching locomotive from the Baldwin Locomotive Works.

The Duluth, Missabe & Northern has ordered eight Mallet, one ten-wheel and three eight-wheel switchers from the Baldwin Locomotive Works.

The Duluth & Iron Range, reported in the Railroad Age Gazette of December 24 as being in the market for locomotives, has ordered 12 consolidation locomotives from the Baldwin Locomotive Works.

The Staten Island Rapid Transit Co., reported in the Railroad Age Gazette of December 24 as being in the market for four eight-wheel locomotives, has ordered this equipment from the American Locomotive Co.

The Cincinnati, Hamilton & Dayton, reported in the Railroad Age Gazette of November 26 as figuring on locomotives, has ordered 20 consolidation and five Pacific locomotives from the American Locomotive Company.

The Georgia Southern & Florida has ordered two Pacific passenger locomotives from the Baldwin Locomotive Works instead of the American Locomotive Co., as mentioned in the Railroad Age Gazette of December 24.

The New York, Chicago & St. Louis, reported in the Railroad Age Gazette of December 7 as being in the market for locomotives, has ordered 15 ten-wheel and five switching locomotives from the American Locomotive Company.

The Erie, mentioned in the Railroad Age Gazette of December 3 as having ordered locomotives, has ordered five of the 10 six-wheel switchers from the Baldwin Locomotive Works and will build the other five in its own shops.

General Dimensions.

Weight on drivers	148,540 lbs.
Diameter of drivers	50 in.
Cylinders	20-in. x 26 in.
Boiler, working steam pressure	180 lbs.
Heating surface, tubes	1,805 sq. ft.
" " firebox	152 "
" " total	1,957 "
Tubes, number	302
" outside diameter	2 in.
" length	11 ft. 6 "
Firebox, type	Extended
" length	114 1/2 in.
" width	66 "
" material	Open-hearth steel.
Grate area	52.3 sq. ft.
Water capacity	4,500 gals.
Coal capacity	7 tons

CAR BUILDING.

The Long Island will order 10 all-steel, 62-ft. baggage cars early in 1910.

The Illinois Traction System has ordered four eight-wheel cabooses from the Hicks Locomotive & Car Works.

The Erie Railroad, as reported in the Railroad Age Gazette of December 17, has ordered 100 furniture cars from the Pressed Steel Car Co. These cars will have a capacity of 80,000 lbs. and will weigh 45,000 lbs. They will be 50 ft. 4 1/4 in. long, 9 ft. wide and 10 ft. high, inside measurements, and 51 ft. 8 3/4 in. long over running boards, 10 ft. 2 1/2 in. wide over side doors and 14 ft. 7 7/8 in. high over running boards. The bodies will have steel framing and wood sheathing and the underframes will be of steel. The special equipment includes:

Bolsters, truck	Cast steel
Brake-shoes	Steel back
Brasses	Metals Corporation
Couplers	Climax
Door fastenings	Security No. 3
Draft gear	Miner friction
Dust guards	Bass wood
Roofs	Outside metal roof
Side bearings	Plain
Springs	Railway Steel Spring
Trucks	Andrus side frame
Wheels	Cast iron; Erie specifications

The Northern Pacific has ordered 20 first class coaches, 10 tourist sleepers, 15 dining cars, 6 parlor cars and 11 observation cars from Barney & Smith; 20 coaches, 6 combination coach and baggage, 12 mail and express, 20 baggage cars, from the American Car & Foundry Co., and 16 sleepers and 12 tourist sleepers from the Pullman Co. This equipment has been mentioned from time to time in the Railroad Age Gazette. Delivery on the American Car & Foundry and the Barney & Smith orders is specified for March, 1910. The 20 coaches and the tourist sleepers ordered from Barney & Smith will be 78 ft. long over all, the dining cars, parlor cars and observation cars 80 ft. The 20 coaches from the American Car & Foundry Co. will be 78 ft. over all, the six combination coach and baggage 75 ft. 9 in., the 12 mail cars 73 ft. 5 in., and the 20 baggage cars 75 ft. 5 in. All of the cars will be wood and the special equipment includes the following:

Bolsters	Commonwealth
Couplers	Chicago Pressed Steel
Heating system	Gold duplex and Gold direct
Lighting system	Oil lamps and dynamo electric
Trucks	Company standard
Wheels	Steel tired, 37 1/4 in.

The Cornwall & Lebanon, as mentioned in the Railroad Age Gazette of December 17, has ordered 50 forty-ton, all-steel gondola cars and 50 thirty-ton steel underframe box cars from the Pressed Steel Car Co. The gondolas will weigh about 21,500 lbs. and will be 34 ft. long, 9 ft. 2 in. wide and 3 ft. 2 in. high, inside measurements, and 35 ft. 6 in. long, 9 ft. 9 in. wide and 7 ft. 1/2 in. high, over all. The box cars will weigh about 35,500 lbs. and will be 36 ft. long, 8 ft. 6 in. wide and 8 ft. high, inside measurements, and 37 ft. 3 1/2 in. long, 9 ft. 8 1/2 in. wide and 13 ft. 6 in. high, over all. Delivery is specified for January, 1910. The following specialties are additional to those to be furnished by the builders.

	Gondolas.	Box.
Bolsters, truck .....	.....	Reliance on 25 cars.
Brakes	Westinghouse.	Westinghouse.
Brake-shoes	Tappin stl. bk.	Tappin stl. bk.
Couplers	Gould, 5 x 5 in.	Gould, 5 x 5 in.
Doors .....	.....	Side & grain.
Draft gear	Twin spring.	Twin spring.
Dust guards	Basswood.	Basswood.
Journal boxes	Gray iron.	Symington* Gray iron.*
Paint	Dixon's Silica Graphite.	.....
Roofs .....	.....	Chic., old style
Springs—truck	24 draft, Class C.	Class A.
Trucks	Diamond arch bar.	Diamond arch bar.
Wheels, 33-in.	Cast iron.	Cast iron.

*On 25 cars.

IRON AND STEEL.

The Delaware & Eastern has taken bids on 3,500 tons of bridge steel.

The Delaware & Hudson has ordered 8,000 tons of rails from the Bethlehem Steel Co.

The Indiana Harbor Belt has ordered 300 tons of structural steel from the American Bridge Co. for a plate girder.

The Chicago & Western Indiana has ordered from the American Bridge Co. 270 tons of structural steel for two plate girder bridges at Indiana Harbor, Ind.

The Minneapolis, St. Paul & Sault Ste. Marie has ordered from the Minneapolis Steel & Machinery Co. 500 tons of structural steel for bridges in northern Michigan.

The Southern Railway has ordered 1,250 tons of bridge steel from the American Bridge Co., and has divided an order for 1,250 tons between the Phoenix Iron Co. and the Virginia Bridge Co.

General Conditions in Steel.—There has been a reasonable activity in the steel market during the past two weeks, considering the season of the year. There is a feeling that western roads will come into the market soon after the opening of the new year. The mills are generally working up to full capacity, and immediate deliveries are made through premiums in prices. The prevailing opinion seems to be that present prices will generally prevail for some time to come.

SIGNALING.

The Chicago Great Western is said to be in the market for a considerable amount of automatic block signal material.

The Federal Signal Co. has the contract for building a mechanical interlocking plant at the Atlantic City terminus of the Atlantic City Railroad (Philadelphia & Reading).

The Rock Island road is to install automatic block signals on the line between Fort Worth and Dallas, Tex., 34 miles. The St. Louis Southwestern and the St. Louis & San Francisco use the Rock Island lines between these cities.

On the Iowa division of the Rock Island the night color indications of all signals and switches have been recently changed to red-yellow-green between Valley Junction and Davenport, 180 miles. Yellow is also used for the adverse indication of siding switches.

New Interlockings on the Pennsylvania.

Interlockings now in course of construction or nearing completion, on the Pennsylvania Railroad, are as follows:

Thirty-five-lever electro pneumatic machine at Tenth street, Camden, on the Amboy division; this plant will be equipped with upper quadrant signals; detector locking, eliminating the use of detector bars; advance route locking, and approach locking.

Sixteen-lever mechanical machine at Cooper's Creek, Camden, on the Amboy division, with electro pneumatic lower quadrant signals.

Twenty-three-lever electro mechanical machine at Farmingdale, a crossing and junction point with the Central of N. J., on the Amboy Division. This machine will be comprised of 15 electric levers and 8 mechanical levers. The signals will be all-electric, and detector locking will be used instead of detector bars.

Twenty-four-lever electro mechanical machine at Gap, on the Philadelphia Division, this machine being comprised of 16 electric levers and 8 mechanical levers, protection being afforded by the installation of detector locking, and route and approach locking. Signals will all be top-post mechanism electric signals.

Twelve-lever electro mechanical machine at Elwyn, on the Central Division, having 8 electric levers and 4 mechanical levers. This interlocking is situated at the end of the double track stretch of 14 miles of upper quadrant automatic signals installed in 1906 on this division, and will be protected as fully as the larger interlockings now being installed on other divisions.

Twenty-three-lever electro pneumatic machine at Second street and Virginia avenue, Washington, and 17-lever electro pneumatic machine at Water street, Washington. Both of these plants will be equipped with upper quadrant signals, using green for clear, being situated just south of the large installation recently made at the Washington Terminal, green for clear being used throughout the Washington Terminal work. This section of the P. R. R. is now used by the southern railways entering Washington, the signals at present being operated in the lower quadrant, although green for clear and yellow for caution are used. Alternating current track circuits will be used at both of these plants, and they will be fully protected with advance route locking, detector locking and approach locking.

Forty-seven-lever electro pneumatic machine at Conemaugh, on the Pittsburgh Division. Alternating current track circuits, advance route locking, approach locking and detector locking will be installed at this plant.

Interlockings proposed for the near future are as follows:

At Twenty-second street, "B" cabin, Philadelphia, extensive changes are about to be made. This is an eight-track interlocking, handling movements inward and outward from two distinct divisions, as well as movements to and from engine and passenger storage yards. The signals at this interlocking will be changed from lower quadrant to three-position upper quadrant signals, and movements over the crossovers and ladder tracks will be protected with advance route locking and detector locking, the detector bars now in service being done away with. This installation means the equipment of the second of the two largest interlockings on the Philadelphia

Terminal Division with upper quadrant signals and the latest approved method of route and detector locking. The interlocking at Seventeenth street, "A" cabin, is now being operated in this manner. These two interlockings control the movements of all trains entering and leaving the Broad street station terminal at Philadelphia.

On account of the extensive changes under consideration at Union Station, Baltimore, two mechanical machines, one being 104 levers, will be taken out, and an electro pneumatic machine of sufficient size installed to take the place of both. There will be alternating current track circuits and route and detector locking.

A new 23-lever electro pneumatic machine will be put in at Lafayette street, Newark, with upper quadrant signals, and route, detector and approach locking.

A new 40-lever mechanical machine will be installed at Sunbury, on the Sunbury Division.

At "K" tower, on the Philadelphia Terminal Division, the detector bars will be taken out, and detector locking installed.

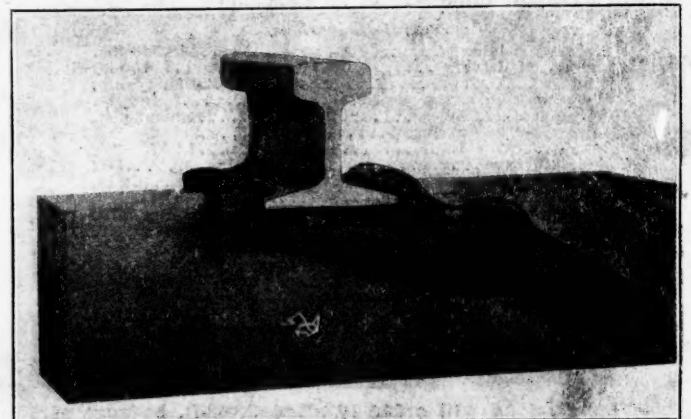
At Thirty-second street, "D" tower, on the Philadelphia Terminal Division, a new 11-lever electro pneumatic machine, with detector locking, will be installed. Alternating current track circuits will be used at this point.

At Radebaugh, on the Pittsburgh Division, a new 17-lever electro pneumatic machine with alternating current track circuits, and route and detector locking, will be installed.

At South West Junction, a junction with the Southwest Branch of the Pittsburgh Division, extensive changes are proposed. This installation will require a 35-lever electro pneumatic machine.

Berry Rail Clamp.

The Berry Rail Clamp is a device to keep rails from spreading, tipping or creeping. It is made of stamped steel about $\frac{1}{2}$ in. thick and 2 in. wide. It can also be made of malleable iron. This clamp, as can be seen from the illustration, is applied without disturbing the rails. It firmly grasps and presses down the inside flange of the rail, pressing up on the outside

**Berry Rail Clamp.**

flange of the rail. At the same time it clasps the outside flange so that the rail cannot spread and grasps the inside so that the rail cannot tip. It is claimed to bind the rail in such a manner that it cannot creep. The end of the clamp is fastened to the side of the tie between the rails by an ordinary bolt or rail spike, which leaves it at all times acting in unison with the movement of the tie and rail.

This clamp is also made with an outside extension bearing against the under side of the head of the rail, forming a rail brace for use on curves.

The clamp is claimed to keep the outside of the rail from wearing into the tie, thus protecting the tie from the usual wear on the outside, also on track thus equipped, the wheels will wear across the whole wearing surface of the rail, instead of only on the inside half of the rail.

The Berry Rail Clamp Co., Fond du Lac, Wis., has been incorporated to make the clamp. The officers are: George W. Post, president; William Berry, vice-president; Howard T. Sackett, secretary, and Fred D. Pendell, treasurer.

